

SPECIFICATIONS

ROOF REPLACEMENT

NORTH AMERICAN BUILDINGS

NC ZOOLOGICAL PARK

ASHEBORO, NORTH CAROLINA

SCO # 19-20040-01A

CODE: 41814

ITEM: 4E05A

ENGINEERED CONCEPTS I TERRACON

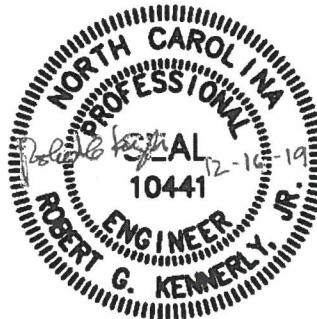
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EC Project No. FY196012

December 16, 2019

Bid Set

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ADVERTISEMENT FOR BIDS

Sealed proposals will be received until 2:00 pm on January 30, 2020 in the W. David Stedman Education Center, at 4401 Zoo Parkway, Asheboro, NC 27205 for construction associated with roof replacement of the North American Buildings, at which time and place, bids will be opened and read. Bidders should meet in the Building's entry lobby and receive directives of exact meeting location from the front desk.

There will be a mandatory pre-bid meeting at 2:00 pm on January 9, 2020 in the W. David Stedman Education Center, at 4401 Zoo Parkway, Asheboro, NC 27205. Bidders should meet in the Building's entry lobby and receive directives of exact meeting location from the front desk.

There are number of existing buildings included in the roof replacement project and a number of Bid Alternates in the project. As part of the Pre-Bid Meeting, the buildings will be toured, and Bid Alternates will be discussed. See Alternates section in Section 01010 for a complete listing of alternates.

Complete Plans and specifications for this project can be obtained from Engineered Concepts | Terracon at 600 D North Regional Road, Greensboro, NC 27409 (by appointment) during normal office hours.

Plan Deposit: One Hundred, Twenty-Five Dollars (\$125.00)

The state reserves the unqualified right to reject any and all proposals.

Signed: _____

Mr. Gerry Parker, PE,
Director of Planning and Construction
North Carolina Zoological Park

NOTICE TO BIDDERS

Sealed proposals will be received by the North Carolina Department of Natural and Cultural Resources, Raleigh NC. The sealed proposals shall be hand delivered or delivered by Courier. If delivered by courier, the sender shall require a receipt of delivery.

Sealed Proposals Delivery Location

Send to:
**Mr. Gerry Parker, PE,
Director of Planning and Construction
North Carolina Zoological Park
W. David Stedman Education Center
4401 Zoo Parkway
Asheboro, NC 27205**

Deadline for Delivery

Proposals will be received up to January 30, 2020 at 2:00pm and immediately thereafter publicly opened and read for the furnishing of labor, material and equipment entering into the construction of

**Roof Replacement of North American Buildings,
North Carolina Zoological Park, Asheboro, NC
SCO # 19-20040-01A CODE: 41814 ITEM: 4E05A**

Project includes roof replacement, skylight replacement, window and metal façade panel replacement, repairs to damaged wood framing and wood soffits as indicated in the drawings and specifications.

Bids will be received for Contract Type – Single prime. All proposals shall be lump sum.

Mandatory Pre-Bid Meeting

An open mandatory pre-bid meeting will be held for all interested bidders on January 9, 2020 at 2:00pm in the W. David Stedman Education Center at the North Carolina Zoological Park located at 4401 Zoo Parkway, Asheboro, North Carolina. Bidders should meet in the Building's entry lobby and receive directives of exact meeting location from the front desk. The meeting will address project specific questions, issues, bidding procedures and bid forms.

The pre-bid meeting will be divided into two periods.

1. Informal period: A tour of the buildings will be conducted for prospective bidders. Areas of work will be pointed out. No questions will be addressed during the tour.
2. Formal period: Period receive project-related questions and to address bid requirements.

Plans and Specifications

Complete plans, specifications and contract documents will be available from:

The offices of Engineered Concepts I Terracon Consultants, 600 D North Regional Road, Greensboro, NC, (by appointment).

In the plan rooms of the Associated General Contractors, Carolinas Branch, in the local North Carolina offices of McGraw-Hill Dodge Corporation.

In the plan rooms of Eastern Regional Office of Reed Construction Data in Norcross, GA.

In minority plan rooms at Hispanic Contractors Association of the Carolinas (HCAC) in Winston-Salem, Charlotte and Raleigh Areas – 877-227-1680

In the plan rooms at NCIMED Plan & Resource Center, 114 West Parrish Street, 6th Floor, Durham, NC 27701, 919-956-8889 or 919-287-3036

In the plan rooms at Metrolina Minority Contractors Association, 3124 W. Trade Street, Unit A, Charlotte, NC 28202. Ph. 704-332-5746 Fax: 704-332-5990

or may be obtained by those qualified as prime bidders, upon deposit of One-Hundred Twenty-five dollars (\$125.00) in cash or certified check. The full plan deposit will be returned to those bidders provided all documents are returned in good, usable condition within ten (10) days after the bid date.

NOTE: The bidder shall include with the bid proposal the form *Identification of Minority Business Participation* identifying the minority business participation it will use on the project and shall include either *Affidavit A* or *Affidavit B* as applicable. Forms and instructions are included within the Proposal Form in the bid documents. Failure to complete these forms is grounds for rejection of the bid. (GS143-128.2c Effective 1/1/2002.)

All contractors are hereby notified that they must have proper license as required under the state laws governing their respective trades.

General contractors are notified that Chapter 87, Article 1, General Statutes of North Carolina, will be observed in receiving and awarding general contracts. General contractors submitting bids on this project must have license classification for Intermediate or Unlimited Construction.

NOTE--SINGLE PRIME CONTRACTS: Under GS 87-1, a contractor that superintends or manages construction of any building, highway, public utility, grading, structure or improvement shall be deemed a "general contractor" and shall be so licensed. Therefore a single prime project that involves other trades will require the single prime contractor to hold a proper General Contractors license. **EXCEPT:** On public buildings being bid single prime, where the total value of the general construction does not exceed 25% of the total construction value, contractors under GS87- Arts 2 and 4 (Plumbing, Mechanical & Electrical) may bid and contract directly with the Owner as the SINGLE PRIME CONTRACTOR and may subcontract to other properly licensed trades. [GS87-1.1- Rules .0210](#)

Each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company, insured by the Federal Deposit Insurance Corporation, of an amount equal to not less than five percent (5%) of the proposal, or in lieu thereof a bidder may offer a bid bond of five percent (5%) of the bid executed by a surety company licensed under the laws of North Carolina to execute the contract in accordance with the bid bond. Said deposit shall be retained by the owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten days after the award or to give satisfactory surety as required by law.

A performance bond and a payment bond will be required for one hundred percent (100%) of the contract price.

Payment will be made based on ninety-five percent (95%) of monthly estimates and final payment made upon completion and acceptance of work.

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of 30 days.

The owner reserves the right to reject any or all bids and to waive informalities.

Designer

Engineered Concepts I Terracon
Consultants Inc.
P.O. Box 35286., Greensboro, NC 27425-5286
336-605-8020

Owner

Department of Natural and Cultural Resources -
NC Zoological Park
State Construction Office
301 N. Wilmington St Suite 450
Raleigh, NC. 27601
(919) 807-4100

SCO-Notice To Bidders 2010 (Updated Dec. 2010 – w/ Feb 2019 revisions)

**INSTRUCTIONS TO BIDDERS
AND
GENERAL CONDITIONS OF THE CONTRACT**

STANDARD FORM FOR CONSTRUCTION PROJECTS

**STATE CONSTRUCTION OFFICE
NORTH CAROLINA
DEPARTMENT OF ADMINISTRATION**

Form OC-15

This document is intended for use on State capital construction projects and shall not be used on any project that is not reviewed and approved by the State Construction Office. Extensive modification to the General Conditions by means of “Supplementary General Conditions” is strongly discouraged. State agencies and institutions may include special requirements in “Division 1 – General Requirements” of the specifications, where they do not conflict with the General Conditions.

Twenty Fourth Edition January 2013

INSTRUCTIONS TO BIDDERS

For a proposal to be considered it must be in accordance with the following instructions:

1. PROPOSALS

Proposals must be made in strict accordance with the Form of Proposal provided therefor, and all blank spaces for bids, alternates, and unit prices applicable to bidder's work shall be properly filled in. When requested alternates are not bid, the proposer shall so indicate by the words "No Bid". Any blanks shall also be interpreted as "No Bid". The bidder agrees that bid on Form of Proposal detached from specifications will be considered and will have the same force and effect as if attached thereto. Photocopied or faxed proposals will not be considered. Numbers shall be stated both in writing and in figures for the base bids and alternates. If figures and writing differ, the written number will supersede the figures.

Any modifications to the Form of Proposal (including alternates and/or unit prices) will disqualify the bid and may cause the bid to be rejected.

The bidder shall fill in the Form of Proposal as follows:

- a. If the documents are executed by a sole owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person executing them.
- b. If the documents are executed by a partnership, that fact shall be evidenced by the word "Co-Partner" appearing after the name of the partner executing them.
- c. If the documents are executed on the part of a corporation, they shall be executed by either the president or the vice president and attested by the secretary or assistant secretary in either case, and the title of the office of such persons shall appear after their signatures. The seal of the corporation shall be impressed on each signature page of the documents.
- d. If the proposal is made by a joint venture, it shall be executed by each member of the joint venture in the above form for sole owner, partnership or corporation, whichever form is applicable.
- e. All signatures shall be properly witnessed.
- f. If the contractor's license of a bidder is held by a person other than an owner, partner or officer of a firm, then the licensee shall also sign and be a party to the proposal. The title "Licensee" shall appear under his/her signature.

Proposals should be addressed as indicated in the Advertisement for Bids and be delivered, enclosed in an opaque sealed envelope, marked "Proposal" and bearing the title of the work, name of the bidder, and the contractor's license number of the bidder. Bidders should clearly mark on the outside of the bid envelope which contract(s) they are bidding.

Bidder shall identify on the bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts or an affidavit indicating work under contract will be self-performed, as required by G.S. 143-128.2(c) and G.S. 143-128.2(f). Failure to comply with these requirements is grounds for rejection of the bid.

For projects bid in the single-prime alternative, the names and license numbers of major subcontractors shall be listed on the proposal form.

It shall be the specific responsibility of the bidder to deliver his bid to the proper official at the selected place and prior to the announced time for the opening of bids. Later delivery of a bid for any reason, including delivery by any delivery service, shall disqualify the bid.

Unit prices quoted in the proposal shall include overhead and profit and shall be the full compensation for the contractor's cost involved in the work. See General Conditions, Article 19c-1.

2. EXAMINATION OF CONDITIONS

It is understood and mutually agreed that by submitting a bid the bidder acknowledges that he has carefully examined all documents pertaining to the work, the location, accessibility and general character of the site of the work and all existing buildings and structures within and adjacent to the site, and has satisfied himself as to the nature of the work, the condition of existing buildings and structures, the conformation of the ground, the character, quality and quantity of the material to be encountered, the character of the equipment, machinery, plant and any other facilities needed preliminary to and during prosecution of the work, the general and local conditions, the construction hazards, and all other matters, including, but not limited to, the labor situation which can in any way affect the work under the contract, and including all safety measures required by the Occupational Safety and Health Act of 1970 and all rules and regulations issued pursuant thereto. It is further mutually agreed that by submitting a proposal the bidder acknowledges that he has satisfied himself as to the feasibility and meaning of the plans, drawings, specifications and other contract documents for the construction of the work and that he accepts all the terms, conditions and stipulations contained therein; and that he is prepared to work in cooperation with other contractors performing work on the site.

Reference is made to contract documents for the identification of those surveys and investigation reports of subsurface or latent physical conditions at the site or otherwise affecting performance of the work which have been relied upon by the designer in preparing the documents. The owner will make copies of all such surveys and reports available to the bidder upon request.

Each bidder may, at his own expense, make such additional surveys and investigations as he may deem necessary to determine his bid price for the performance of the work. Any on-site investigation shall be done at the convenience of the owner. Any reasonable request for access to the site will be honored by the owner.

3. BULLETINS AND ADDENDA

Any addenda to specifications issued during the time of bidding are to be considered covered in the proposal and in closing a contract they will become a part thereof. It shall be the bidder's responsibility to ascertain prior to bid time the addenda issued and to see that his bid includes any changes thereby required.

Should the bidder find discrepancies in, or omission from, the drawings or documents or should he be in doubt as to their meaning, he shall at once notify the designer who will send written instructions in the form of addenda to all bidders. Notification should be no later than seven (7) days prior to the date set for receipt of bids. Neither the owner nor the designer will be responsible for any oral instructions.

All addenda should be acknowledged by the bidder(s) on the Form of Proposal. However, even if not acknowledged, by submitting a bid, the bidder has certified that he has reviewed all issued addenda and has included all costs associated within his bid.

4. BID SECURITY

Each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company insured by the Federal Deposit Insurance Corporation, or a bid bond in an amount equal to not less than five percent (5%) of the proposal, said deposit to be retained by the owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten (10) days after the award or to give satisfactory surety as required by law (G.S. 143-129).

Bid bond shall be conditioned that the surety will, upon demand, forthwith make payment to the obligee upon said bond if the bidder fails to execute the contract. The owner may retain bid securities of any bidder(s) who may have a reasonable chance of award of contract for the full duration of time stated in the Notice to Bidders. Other bid securities may be released sooner, at the discretion of the owner. All bid securities (cash or certified checks) shall be returned to the bidders promptly after award of contracts, and no later than seven (7) days after expiration of the holding period stated in the Notice to Bidders. Standard Form of Bid Bond is included in these specifications and shall be used.

5. RECEIPT OF BIDS

Bids shall be received in strict accordance with requirements of the General Statutes of North Carolina. Bid security shall be required as prescribed by statute. Prior to the closing of the bid, the bidder will be permitted to change or withdraw his bid. Guidelines for opening of public construction bids are available from the State Construction Office.

6. OPENING OF BIDS

Upon opening, all bids shall be read aloud. Once bidding is closed, there shall not be any withdrawal of bids by any bidder and no bids may be returned by the designer to any bidder. After the opening of bids, no bid may be withdrawn, except under the provisions of General Statute 143-129.1, for a period of thirty days unless otherwise specified. Should the successful bidder default and fail to execute a contract, the contract may be awarded to the next lowest and responsible bidder. The owner reserves the unqualified right to reject any and all bids. Reasons for rejection may include, but shall not be limited to, the following:

- a. If the Form of Proposal furnished to the bidder is not used or is altered.
- b. If the bidder fails to insert a price for all bid items, alternate and unit prices requested.
- c. If the bidder adds any provisions reserving the right to accept or reject any award.
- d. If there are unauthorized additions or conditional bids, or irregularities of any kind which tend to make the proposal incomplete, indefinite or ambiguous as to its meaning.
- e. If the bidder fails to complete the proposal form where information is requested so the bid may be properly evaluated by the owner.
- f. If the unit prices contained in the bid schedule are unacceptable to the owner and the State Construction Office.
- g. If the bidder fails to comply with other instructions stated herein.

7. BID EVALUATION

The award of the contract will be made to the lowest responsible bidder as soon as practical. The owner may award on the basis of the base bid and any alternates the owner chooses.

Before awarding a contract, the owner may require the apparent low bidder to qualify himself to be a responsible bidder by furnishing any or all of the following data:

- a. The latest financial statement showing assets and liabilities of the company or other information satisfactory to the owner.
- b. A listing of completed projects of similar size.
- c. Permanent name and address of place of business.
- d. The number of regular employees of the organization and length of time the organization has been in business under present name.
- e. The name and home office address of the surety proposed and the name and address of the responsible local claim agent.
- f. The names of members of the firms who hold appropriate trade licenses, together with license numbers.
- g. If prequalified, contractor info will be reviewed and evaluated comparatively to submitted prequalification package.

Failure or refusal to furnish any of the above information, if requested, shall constitute a basis for disqualification of any bidder.

In determining the lowest responsible, responsive bidder, the owner shall take into consideration the bidder's compliance with the requirements of G.S. 143-128.2(c), the past performance of the bidder on construction contracts for the State with particular concern given to completion times, quality of work, cooperation with other contractors, and cooperation with the designer and owner. Failure of the low bidder to furnish affidavit and/or documentation as required by G.S. 143-128.2(c) shall constitute a basis for disqualification of the bid.

Should the owner adjudge that the apparent low bidder is not the lowest responsible, responsive bidder by virtue of the above information, said apparent low bidder will be so notified and his bid security shall be returned to him.

8. PERFORMANCE BOND

The successful bidder, upon award of contract, shall furnish a performance bond in an amount equal to 100 percent of the contract price. See Article 35, General Conditions.

9. PAYMENT BOND

The successful bidder, upon award of contract, shall furnish a payment bond in an amount equal to 100 percent of the contract price. See Article 35, General Conditions.

10. PAYMENTS

Payments to the successful bidders (contractors) will be made on the basis of monthly estimates. See Article 31, General Conditions.

11. PRE-BID CONFERENCE

Prior to the date set for receiving bids, the Designer may arrange and conduct a Pre-Bid Conference for all prospective bidders. The purpose of this conference is to review project requirements and to respond to questions from prospective bidders and their subcontractors or material suppliers related to the intent of bid documents. Attendance by prospective bidders shall be as required by the "Notice to Bidders".

12. SUBSTITUTIONS

In accordance with the provisions of G.S. 133-3, material, product, or equipment substitutions proposed by the bidders to those specified herein can only be considered during the bidding phase until ten (10) days prior to the receipt of bids when submitted to the Designer with sufficient data to confirm material, product, or equipment equality. Proposed substitutions submitted after this time will be considered only as potential change order.

Submittals for proposed substitutions shall include the following information:

- a. Name, address, and telephone number of manufacturer and supplier as appropriate.
- b. Trade name, model or catalog designation.
- c. Product data including performance and test data, reference standards, and technical descriptions of material, product, or equipment. Include color samples and samples of available finishes as appropriate.
- d. Detailed comparison with specified products including performance capabilities, warranties, and test results.
- e. Other pertinent data including data requested by the Designer to confirm product equality.

If a proposed material, product, or equipment substitution is deemed equal by the Designer to those specified, all bidders of record will be notified by Addendum.

GENERAL CONDITIONS OF THE CONTRACT

The use or reproduction of this document or any part thereof is authorized for and limited to use on projects of the State of North Carolina, and is distributed by, through and at the discretion of the State Construction Office, Raleigh, North Carolina, for that distinct and sole purpose.

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ARTICLE 1 - DEFINITIONS

- a. The **contract documents** consist of the Notice to Bidders; Instructions to Bidders; General Conditions of the Contract; special conditions if applicable; Supplementary General Conditions; the drawing and specifications, including all bulletins, addenda or other modifications of the drawings and specifications incorporated into the documents prior to their execution; the proposal; the contract; the performance bond; the payment bond; insurance certificates; the approval of the attorney general; and the certificate of the Office of State Budget and Management. All of these items together form the contract.
- b. The **owner** is the State of North Carolina through the agency named in the contract.
- c. The **designer(s)** are those referred to within this contract, or their authorized representatives. The Designer(s), as referred to herein, shall mean architect and/or engineer. They will be referred to hereinafter as if each were of the singular number, masculine gender.
- d. The **contractor**, as referred to hereinafter, shall be deemed to be either of the several contracting parties called the "Party of the First Part" in either of the several contracts in connection with the total project. Where, in special instances hereinafter, a particular contractor is intended, an adjective precedes the word "contractor," as "general," "heating," etc. For the purposes of a single prime contract, the term Contractor shall be deemed to be the single contracting entity identified as the "Party of the First Part" in the single Construction Contract. Any references or adjectives that name or infer multiple prime contractors shall be interpreted to mean the single prime Contractor.
- e. A **subcontractor**, as the term is used herein, shall be understood to be one who has entered into a direct contract with a contractor, and includes one who furnishes materials worked to a special design in accordance with plans and specifications covered by the contract, but does not include one who only sells or furnishes materials not requiring work so described or detailed.
- f. **Written notice** shall be defined as notice in writing delivered in person to the contractor, or to a partner of the firm in the case of a partnership, or to a member of the contracting organization, or to an officer of the organization in the case of a corporation, or sent to the last known business address of the contracting organization by registered mail.
- g. **Work**, as used herein as a noun, is intended to include materials, labor, and workmanship of the appropriate contractor.
- h. The **project** is the total construction work to be performed under the contract documents by the several contractors.
- i. **Project Expediter**, as used herein, is an entity stated in the contract documents, designated to effectively facilitate scheduling and coordination of work activities. See Article 14(f) for responsibilities of a Project Expediter. **For the purposes of a single prime contract, the single prime contractor shall be designated as the Project Expediter.**
- j. **Change order**, as used herein, shall mean a written order to the contractor subsequent to the signing of the contract authorizing a change in the contract. The change order shall be signed by the contractor, designer and the owner, and approved by the State Construction Office, in that order (Article 19).

- k. **Field Order**, as used herein, shall mean a written approval for the contractor to proceed with the work requested by owner prior to issuance of a formal Change Order. The field order shall be signed by the contractor, designer, owner, and State Construction Office.
- l. **Time of completion**, as stated in the contract documents, is to be interpreted as consecutive calendar days measured from the date established in the written Notice to Proceed, or such other date as may be established herein (Article 23).
- m. **Liquidated damages**, as stated in the contract documents [, is an amount reasonably estimated in advance to cover the consequential damages associated with the Owner's economic loss in not being able to use the Project for its intended purposes at the end of the contract's completion date as amended by change order, if any, by reason of failure of the contractor(s) to complete the work within the time specified. Liquidated damages does not include the Owner's extended contract administration costs (including but not limited to additional fees for architectural and engineering services, testing services, inspection services, commissioning services, etc.), such other damages directly resulting from delays caused solely by the contractor, or consequential damages that the Owner identified in the bid documents that may be impacted by any delay caused solely by the Contractor (e.g., if a multi-phased project-subsequent phases, delays in start other projects that are dependent on the completion of this Project, extension of leases and/or maintenance agreements for other facilities).
- n. **Surety**, as used herein, shall mean the bonding company or corporate body which is bound with and for the contractor, and which engages to be responsible for the contractor and his acceptable performance of the work.
- o. **Routine written communications between the Designer and the Contractor** are any communication other than a "request for information" provided in letter, memo, or transmittal format, sent by mail, courier, electronic mail, or facsimile. Such communications can not be identified as "request for information".
- p. **Clarification or Request for information (RFI)** is a request from the Contractor seeking an interpretation or clarification by the Designer relative to the contract documents. The RFI, which shall be labeled (RFI), shall clearly and concisely set forth the issue or item requiring clarification or interpretation and why the response is needed. The RFI must set forth the Contractor's interpretation or understanding of the contract documents requirements in question, along with reasons for such an understanding.
- q. **Approval** means written or imprinted acknowledgement that materials, equipment or methods of construction are acceptable for use in the work.
- r. **Inspection** shall mean examination or observation of work completed or in progress to determine its compliance with contract documents.
- s. **"Equal to" or "approved equal"** shall mean materials, products, equipment, assemblies, or installation methods considered equal by the bidder in all characteristics (physical, functional, and aesthetic) to those specified in the contract documents. Acceptance of equal is subject to approval of Designer and owner.
- t. **"Substitution" or "substitute"** shall mean materials, products, equipment, assemblies, or installation methods deviating in at least one characteristic (physical, functional, or aesthetic) from those specified, but which in the opinion of the bidder would improve competition and/or enhance the finished installation. Acceptance of substitution is subject to the approval of the Designer and owner.

- u. **Provide** shall mean furnish and install complete in place, new, clean, operational, and ready for use.
- v. **Indicated and shown** shall mean provide as detailed, or called for, and reasonably implied in the contract documents.
- w. **Special inspector** is one who inspects materials, installation, fabrication, erection or placement of components and connections requiring special expertise to ensure compliance with the approved construction documents and referenced standards.
- x. **Commissioning** is a quality assurance process that verifies and documents that building components and systems operate in accordance to the owner's project requirements and the project design documents.
- y. **Designer Final Inspection** is the inspection performed by the design team to determine the completeness of the project in accordance with approved plans and specifications. This inspection occurs prior to SCO final inspection.
- z. **SCO Final Inspection** is the inspection performed by the State Construction Office to determine the completeness of the project in accordance with NC Building Codes and approved plans and specifications.
- aa. **Beneficial Occupancy** is requested by the owner and is occupancy or partial occupancy of the building after all life safety items have been completed as determined by the State Construction Office. Life safety items include but not limited to fire alarm, sprinkler, egress and exit lighting, fire rated walls, egress paths and security.
- bb. Final Acceptance is the date in which the State Construction Office accepts the construction as totally complete. This includes the SCO Final Inspection and certification by the designer that all punch lists are completed.

ARTICLE 2 - INTENT AND EXECUTION OF DOCUMENTS

- a. The drawings and specifications are complementary, one to the other, and that which is shown on the drawings or called for in the specifications shall be as binding as if it were both called for and shown. The intent of the drawings and specifications is to establish the scope of all labor, materials, transportation, equipment, and any and all other things necessary to provide a bid for a complete job. In case of discrepancy or disagreement in the contract documents, the order of precedence shall be: Form of Contract, specifications, large-scale detail drawings, small-scale drawings.
- b. The wording of the specifications shall be interpreted in accordance with common usage of the language except that words having a commonly used technical or trade meaning shall be so interpreted in preference to other meanings.
- c. The contractor shall execute each copy of the proposal, contract, performance bond and payment bond as follows:
 - 1. If the documents are executed by a sole owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person executing them.
 - 2. If the documents are executed by a partnership, that fact shall be evidenced by the word "Co-Partner" appearing after the name of the partner executing them.

3. If the documents are executed on the part of a corporation, they shall be executed by either the president or the vice president and attested by the secretary or assistant secretary in either case, and the title of the office of such persons shall appear after their signatures. The seal of the corporation shall be impressed on each signature page of the documents.
4. If the documents are made by a joint venture, they shall be executed by each member of the joint venture in the above form for sole owner, partnership or corporation, whichever form is applicable to each particular member.
5. All signatures shall be properly witnessed.
6. If the contractor's license is held by a person other than an owner, partner or officer of a firm, then the licensee shall also sign and be a party to the contract. The title "Licensee" shall appear under his/her signature.
7. The bonds shall be executed by an attorney-in-fact. There shall be attached to each copy of the bond a certified copy of power of attorney properly executed and dated.
8. Each copy of the bonds shall be countersigned by an authorized individual agent of the bonding company licensed to do business in North Carolina. The title "Licensed Resident Agent" shall appear after the signature.
9. The seal of the bonding company shall be impressed on each signature page of the bonds.
10. The contractor's signature on the performance bond and the payment bond shall correspond with that on the contract. The date of performance and payment bond shall not be prior to the date of the contract.

ARTICLE 3 - CLARIFICATIONS AND DETAIL DRAWINGS

- a. In such cases where the nature of the work requires clarification by the designer, such clarification shall be furnished by the designer with reasonable promptness by means of written instructions or detail drawings, or both. Clarifications and drawings shall be consistent with the intent of contract documents, and shall become a part thereof.
- b. The contractor(s) and the designer shall prepare, if deemed necessary, a schedule fixing dates upon which foreseeable clarifications will be required. The schedule will be subject to addition or change in accordance with progress of the work. The designer shall furnish drawings or clarifications in accordance with that schedule. The contractor shall not proceed with the work without such detail drawings and/or written clarifications.

ARTICLE 4 - COPIES OF DRAWINGS AND SPECIFICATIONS

The designer or Owner shall furnish free of charge to the contractors electronic copies of plans and specifications. If requested by the contractor, paper copies of plans and specifications shall be furnished free of charge as follows:

- a. General contractor - Up to twelve (12) sets of general contractor drawings and specifications, up to six (6) sets of which shall include drawings and specifications of all other contracts, plus a clean set of black line prints on white paper of all appropriate drawings, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents.

- b. Each other contractor - Up to six (6) sets of the appropriate drawings and specifications, up to three (3) sets of which shall include drawings and specifications of all other contracts, plus a clean set of black line prints on white paper of all appropriate drawings, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents.
- c. Additional sets shall be furnished at cost, including mailing, to the contractor upon request by the contractor. This cost shall be stated in the bidding documents.
- d. For the purposes of a single-prime contract, the contractor shall receive up to 30 sets of drawings and specifications, plus a clean set of black line prints on white paper of all appropriate drawings, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents.

ARTICLE 5 - SHOP DRAWINGS, SUBMITTALS, SAMPLES, DATA

- a. Within 15 consecutive calendar days after the notice to proceed, each prime contractor shall submit a schedule for submission of all shop drawings, product data, samples, and similar submittals through the Project Expediter to the Designer. This schedule shall indicate the items, relevant specification sections, other related submittal, data, and the date when these items will be furnished to the designer.
- b. The Contractor(s) shall review, approve and submit to the Designer all Shop Drawings, Coordination Drawings, Product Data, Samples, Color Charts, and similar submittal data required or reasonably implied by the Contract Documents. Required Submittals shall bear the Contractor's stamp of approval, any exceptions to the Contract Documents shall be noted on the submittals, and copies of all submittals shall be of sufficient quantity for the Designer to retain up to three (3) copies of each submittal for his own use plus additional copies as may be required by the Contractor. Submittals shall be presented to the Designer in accordance with the schedule submitted in paragraph (a). so as to cause no delay in the activities of the Owner or of separate Contractors.
- c. The Designer shall review required submittals promptly, noting desired corrections if any, and retaining three (3) copies (1 for the Designer, 1 for the owner and 1 for SCO) for his use. The remaining copies of each submittal shall be returned to the Contractor not later than twenty (20) days from the date of receipt by the Designer, for the Contractor's use or for corrections and resubmittal as noted by the Designer. When resubmittals are required, the submittal procedure shall be the same as for the original submittals.
- d. Approval of shop drawings/submittals by the Designer shall not be construed as relieving the Contractor from responsibility for compliance with the design or terms of the contract documents nor from responsibility of errors of any sort in the shop drawings, unless such lack of compliance or errors first have been called in writing to the attention of the Designer by the Contractor.

ARTICLE 6 - WORKING DRAWINGS AND SPECIFICATIONS AT THE JOB SITE

- a. The contractor shall maintain, in readable condition at his job office, one complete set of working drawings and specifications for his work including all shop drawings. Such drawings and specifications shall be available for use by the designer, his authorized representative, owner or State Construction Office.

- b. The contractor shall maintain at the job office, a day-to-day record of work-in-place that is at variance with the contract documents. Such variations shall be fully noted on project drawings by the contractor and submitted to the designer upon project completion and no later than 30 days after final acceptance of the project.
- c. The contractor shall maintain at the job office a record of all required tests that have been performed, clearly indicating the scope of work inspected and the date of approval or rejection.

ARTICLE 7 - OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

All drawings and specifications are instruments of service and remain the property of the owner. The use of these instruments on work other than this contract without permission of the owner is prohibited. All copies of drawings and specifications other than contract copies shall be returned to the owner upon request after completion of the work.

ARTICLE 8 - MATERIALS, EQUIPMENT, EMPLOYEES

- a. The contractor shall, unless otherwise specified, supply and pay for all labor, transportation, materials, tools, apparatus, lights, power, heat, sanitary facilities, water, scaffolding and incidentals necessary for the completion of his work, and shall install, maintain and remove all equipment of the construction, other utensils or things, and be responsible for the safe, proper and lawful construction, maintenance and use of same, and shall construct in the best and most workmanlike manner, a complete job and everything incidental thereto, as shown on the plans, stated in the specifications, or reasonably implied therefrom, all in accordance with the contract documents.
- b. All materials shall be new and of quality specified, except where reclaimed material is authorized herein and approved for use. Workmanship shall at all times be of a grade accepted as the best practice of the particular trade involved, and as stipulated in written standards of recognized organizations or institutes of the respective trades except as exceeded or qualified by the specifications.
- c. Upon notice, the contractor shall furnish evidence as to quality of materials.
- d. Products are generally specified by ASTM or other reference standard and/or by manufacturer's name and model number or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product and manufacturer combination listed. However, the contractor shall be aware that the cited examples are used only to denote the quality standard of product desired and that they do not restrict bidders to a specific brand, make, manufacturer or specific name; that they are used only to set forth and convey to bidders the general style, type, character and quality of product desired; and that equivalent products will be acceptable. Request for substitution of materials, items, or equipment shall be submitted to the designer for approval or disapproval; such approval or disapproval shall be made by the designer prior to the opening of bids. Alternate materials may be requested after the award if it can clearly be demonstrated that it is an added benefit to the owner and the designer and owner approves.
- e. The designer is the judge of equality for proposed substitution of products, materials or equipment.

- g. If at any time during the construction and completion of the work covered by these contract documents, the language, conduct, or attire of any workman of the various crafts be adjudged a nuisance to the owner or designer, or if any workman be considered detrimental to the work, the contractor shall order such parties removed immediately from grounds.

ARTICLE 9 - ROYALTIES, LICENSES AND PATENTS

It is the intention of the contract documents that the work covered herein will not constitute in any way infringement of any patent whatsoever unless the fact of such patent is clearly evidenced herein. The contractor shall protect and save harmless the owner against suit on account of alleged or actual infringement. The contractor shall pay all royalties and/or license fees required on account of patented articles or processes, whether the patent rights are evidenced hereinafter.

ARTICLE 10 - PERMITS, INSPECTIONS, FEES, REGULATIONS

- a. The contractor shall give all notices and comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work under this contract. If the contractor observes that the drawings and specifications are at variance therewith, he shall promptly notify the designer in writing. See Instructions to Bidders, Paragraph 3, Bulletins and Addenda. Any necessary changes required after contract award shall be made by change order in accordance with Article 19. If the contractor performs any work knowing it to be contrary to such laws, ordinances, codes, rules and regulations, and without such notice to the designer, he shall bear all cost arising therefrom. Additional requirements implemented after bidding will be subject to equitable negotiations.
- b. All work under this contract shall conform to the North Carolina State Building Code and other State, local and national codes as are applicable. The cost of all required inspections and permits shall be the responsibility of the contractor and included within the bid proposal. All water taps, meter barrels, vaults and impact fees shall be paid by the contractor unless otherwise noted.
- d. Projects constructed by the State of North Carolina or by any agency or institution of the State are not subject to inspection by any county or municipal authorities and are not subject to county or municipal building codes. The contractor shall, however, cooperate with the county or municipal authorities by obtaining building permits. Permits shall be obtained at no cost.
- e. Projects involving local funding (community colleges) are subject also to county and municipal building codes and inspection by local authorities. The contractor shall pay the cost of these permits and inspections.

ARTICLE 11 - PROTECTION OF WORK, PROPERTY AND THE PUBLIC

- a. The contractors shall be jointly responsible for the entire site and the building or construction of the same and provide all the necessary protections, as required by the owner or designer, and by laws or ordinances governing such conditions. They shall be responsible for any damage to the owner's property, or of that of others on the job, by them, their personnel, or their subcontractors, and shall make good such damages. They shall be responsible for and pay for any damages caused to the owner. All contractors shall have access to the project at all times.
- b. The contractor shall provide cover and protect all portions of the structure when the work is not in progress, provide and set all temporary roofs, covers for doorways, sash and windows, and all other materials necessary to protect all the work on the building, whether set by him, or any of the subcontractors. Any work damaged through the lack of proper protection or from any other cause, shall be repaired or replaced without extra cost to the owner.
- c. No fires of any kind will be allowed inside or around the operations during the course of construction without special permission from the designer and owner.
- d. The contractor shall protect all trees and shrubs designated to remain in the vicinity of the operations by building substantial boxes around same. He shall barricade all walks, roads, etc., as directed by the designer to keep the public away from the construction. All trenches, excavations or other hazards in the vicinity of the work shall be well barricaded and properly lighted at night.
- e. The contractor shall provide all necessary safety measures for the protection of all persons on the job, including the requirements of the A.G.C. *Accident Prevention Manual in Construction*, as amended, and shall fully comply with all state laws or regulations and North Carolina State Building Code requirements to prevent accident or injury to persons on or about the location of the work. He shall clearly mark or post signs warning of hazards existing, and shall barricade excavations, elevator shafts, stairwells and similar hazards. He shall protect against damage or injury resulting from falling materials and he shall maintain all protective devices and signs throughout the progress of the work.
- f. The contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor relating to Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926, published in Volume 39, Number 122, Part II, June 24, 1974, *Federal Register*), and revisions thereto as adopted by General Statutes of North Carolina 95-126 through 155.
- g. The contractor shall designate a responsible person of his organization as safety officer/inspector to inspect the project site for unsafe health and safety hazards, to report these hazards to the contractor for correction, and whose duties also include accident prevention on the project, and to provide other safety and health measures on the project site as required by the terms and conditions of the contract. The name of the safety inspector shall be made known to the designer and owner at the time of the preconstruction conference and in all cases prior to any work starting on the project.
- h. In the event of emergency affecting the safety of life, the protection of work, or the safety of adjoining properties, the contractor is hereby authorized to act at his own discretion, without further authorization from anyone, to prevent such threatened injury or damage.

Any compensation claimed by the contractor on account of such action shall be determined as provided for under Article 19(b).

- i. Any and all costs associated with correcting damage caused to adjacent properties of the construction site or staging area shall be borne by the contractor. These costs shall include but not be limited to flooding, mud, sand, stone, debris, and discharging of waste products.

ARTICLE 12 - SEDIMENTATION POLLUTION CONTROL ACT OF 1973

- a. Any land-disturbing activity performed by the contractor(s) in connection with the project shall comply with all erosion control measures set forth in the contract documents and any additional measures which may be required in order to ensure that the project is in full compliance with the Sedimentation Pollution Control Act of 1973, as implemented by Title 15, North Carolina Administrative Code, Chapter 4, Sedimentation Control, Subchapters 4A, 4B and 4C, as amended (15 N.C.A.C. 4A, 4B and 4C).
- b. Upon receipt of notice that a land-disturbing activity is in violation of said act, the contractor(s) shall be responsible for ensuring that all steps or actions necessary to bring the project in compliance with said act are promptly taken.
- c. The contractor(s) shall be responsible for defending any legal actions instituted pursuant to N.C.G.S. 113A-64 against any party or persons described in this article.
- d. To the fullest extent permitted by law, the contractor(s) shall indemnify and hold harmless the owner, the designer and the agents, consultants and employees of the owner and designer, from and against all claims, damages, civil penalties, losses and expenses, including, but not limited to, attorneys' fees, arising out of or resulting from the performance of work or failure of performance of work, provided that any such claim, damage, civil penalty, loss or expense is attributable to a violation of the Sedimentation Pollution Control Act. Such obligation shall not be construed to negate, abridge or otherwise reduced any other right or obligation of indemnity which would otherwise exist as to any party or persons described in this article.

ARTICLE 13 - INSPECTION OF THE WORK

- a. It is a condition of this contract that the work shall be subject to inspection during normal working hours and during any time work is in preparation and progress by the designer, designated official representatives of the owner, State Construction Office and those persons required by state law to test special work for official approval. The contractor shall therefore provide safe access to the work at all times for such inspections.
- b. All instructions to the contractor will be made only by or through the designer or his designated project representative. Observations made by official representatives of the owner shall be conveyed to the designer for review and coordination prior to issuance to the contractor.
- c. All work shall be inspected by designer, special inspector and/or State Construction Office prior to being covered by the contractor. Contractor shall give a minimum two weeks notice unless otherwise agreed to by all parties. If inspection fails, after the first reinspection all costs associated with additional reinspections shall be borne by the contractor.

- d. Where special inspection or testing is required by virtue of any state laws, instructions of the designer, specifications or codes, the contractor shall give adequate notice to the designer of the time set for such inspection or test, if the inspection or test will be conducted by a party other than the designer. Such special tests or inspections will be made in the presence of the designer, or his authorized representative, and it shall be the contractor's responsibility to serve ample notice of such tests.
- e. All laboratory tests shall be paid by the owner unless provided otherwise in the contract documents except the general contractor shall pay for laboratory tests to establish design mix for concrete, and for additional tests to prove compliance with contract documents where materials have tested deficient except when the testing laboratory did not follow the appropriate ASTM testing procedures.
- f. Should any work be covered up or concealed prior to inspection and approval by the designer, special inspector, and/or State Construction Office such work shall be uncovered or exposed for inspection, if so requested by the designer in writing. Inspection of the work will be made upon notice from the contractor. All cost involved in uncovering, repairing, replacing, recovering and restoring to design condition, the work that has been covered or concealed will be paid by the contractor involved.

ARTICLE 14 - CONSTRUCTION SUPERVISION AND SCHEDULE

- a. Throughout the progress of the work, each contractor shall keep at the job site, a competent superintendent and supervisory staff satisfactory to the designer and the owner. The superintendent and supervisory staff shall not be changed without the consent of the designer and owner unless said superintendent ceases to be employed by the contractor or ceases to be competent as determined by the contractor, designer or owner. The superintendent and other staff designated by the contractor in writing shall have authority to act on behalf of the contractor, and instructions, directions or notices given to him shall be as binding as if given to the contractor. However, directions, instructions, and notices shall be confirmed in writing.
- b. The contractor shall examine and study the drawings and specifications and fully understand the project design, and shall provide constant and efficient supervision to the work. Should he discover any discrepancies of any sort in the drawings or specifications, he shall report them to the designer without delay. He will not be held responsible for discrepancies in the drawings and/or specifications, but shall be held responsible to report them should they become known to him.
- c. All contractors shall be required to cooperate and consult with each other during the construction of this project. Prior to installation of work, all contractors shall jointly prepare coordination drawings, showing locations of various ductworks, piping, motors, pumps, and other mechanical or electrical equipment, in relation to the structure, walls and ceilings. These drawings shall be submitted to the designer through the Project Expediter for information only. Each contractor shall lay out and execute his work to cause the least delay to other contractors. Each contractor shall be financially responsible for any damage to other contractor's work and for undue delay caused to other contractors on the project.
- d. The contractor is required to attend job site progress conferences as called by the designer. The contractor shall be represented at these job progress conferences by both home office and project personnel. These representatives shall have authority to act on behalf of the contractor. These meetings shall be open to subcontractors, material

suppliers and any others who can contribute toward maintaining required job progress. It shall be the principal purpose of these meetings, or conferences, to effect coordination, cooperation and assistance in every practical way toward the end of maintaining progress of the project on schedule and to complete the project within the specified contract time. Each contractor shall be prepared to assess progress of the work as required in his particular contract and to recommend remedial measures for correction of progress as may be appropriate. The designer or his authorized representative shall be the coordinator of the conferences and shall preside as chairman. The contractor shall turn over a copy of his daily reports to the Designer and Owner at the job site progress conference. Owner will determine daily report format.

- e. The contractor(s) shall, employ an engineer or a land surveyor licensed in the State of North Carolina to lay out the work and to establish a bench mark in a location where same will not be disturbed and where direct instruments sights may be taken.
- f. The designer shall designate a Project Expediter on projects involving two or more prime contracts. The Project Expediter shall be designated in the Supplementary General Conditions. The Project Expediter shall have at a minimum the following responsibilities.
 - 1. Prepare the project construction schedule and shall allow all prime contractors (multi-prime contract) and subcontractors (single-prime contract) performing general, plumbing, HVAC, and electrical work equal input into the preparation of the initial construction schedule.
 - 2. Maintain a project progress schedule for all contractors.
 - 3. Give adequate notice to all contractors to ensure efficient continuity of all phases of the work.
 - 4. Notify the designer of any changes in the project schedule.
 - 5. Recommend to the owner whether payment to a contractor shall be approved.
- g. It shall be the responsibility of the Project Expediter to cooperate with and obtain from several prime contractors and subcontractors on the job, their respective work activities and integrate these activities into a project construction schedule in form of a detailed bar chart or Critical Path Method (CPM), schedule. Each prime contractor shall provide work activities within fourteen (14) days of request by the Project Expediter. A “work activity”, for scheduling purposes, shall be any component or contractual requirement of the project requiring at least one (1) day, but not more than fourteen (14) days, to complete or fulfill. The project construction schedule shall graphically show all salient features of the work required to construct the project from start to finish and within the allotted time established in the contract. The time (in days) between the contractor’s early completion and contractual completion dates is part of the project total float time; and shall be used as such, unless amended by a change order. On a multi-prime project, each prime contractor shall review the proposed construction schedule and approve same in writing. The Project Expediter shall submit the proposed construction schedule to the designer for comments. The complete Project construction schedule shall be of the type set forth in the Supplementary General Condition or subparagraph (1) or (2) below, as appropriate:

1. For a project with total contracts of \$500,000 or less, a bar chart schedule will satisfy the above requirement. The schedule shall indicate the estimated starting and completion dates for each major element of the work.
2. For a project with total contracts over \$500,000, a Critical Path Method (CPM) schedule shall be utilized to control the planning and scheduling of the Work. The CPM schedule shall be the responsibility of the Project Expediter and shall be paid for by the Project Expediter.

Bar Chart Schedule: Where a bar chart schedule is required, it shall be time-scaled in weekly increments, shall indicate the estimated starting and completion dates for each major element of the work by trade and by area, level, or zone, and shall schedule dates for all salient features, including but not limited to the placing of orders for materials, submission of shop drawings and other Submittals for approval, approval of shop drawings by designers, the manufacture and delivery of material, the testing and the installation of materials, supplies and equipment, and all Work activities to be performed by the Contractor. The Contractor shall allow sufficient time in his schedule for all commissioning, required inspections and completion of final punchlist(s). Each Work activity will be assigned a time estimate by the Contractor. One day shall be the smallest time unit used.

CPM Schedule: Where a CPM schedule is required, it shall be in time-scaled precedence format using the Project Expediter's logic and time estimates. The CPM schedule shall be drawn or plotted with activities grouped or zoned by Work area or subcontract as opposed to a random (or scattered) format. The CPM schedule shall be time-scaled on a weekly basis and shall be drawn or plotted at a level of detail and logic which will schedule all salient features of the work to be performed by the Contractor. The Contractor shall allow sufficient time in his schedule for all commissioning, required inspections and completion of final punchlist(s).. Each Work activity will be assigned a time estimate by the Contractor. One day shall be the smallest time unit used.

The CPM schedule will identify and describe each activity, state the duration of each activity, the calendar dates for the early and late start and the early and late finish of each activity, and clearly highlight all activities on the critical path. "Total float" and "free float" shall be indicated for all activities. Float time shall not be considered for the exclusive use or benefit of either the Owner or the Contractor, but must be allocated in the best interest of completing the Work within the Contract time. Extensions to the Contract time, when granted by Change Order, will be granted only when equitable time adjustment exceeds the Total Float in the activity or path of activities affected by the change. On contracts with a price over \$2,500,000, the CPM schedule shall also show what part of the Contract Price is attributable to each activity on the schedule, the sum of which for all activities shall equal the total Contract Price.

Early Completion of Project: The Contractor may attempt to complete the project prior to the Contract Completion Date. However, such planned early completion shall be for the Contractor's convenience only and shall not create any additional rights of the Contractor or obligations of the Owner under this Contract, nor shall it change the Time

for Completion or the Contract Completion Date. The Contractor shall not be required to pay liquidated damages to the Owner because of its failure to complete by its planned earlier date. Likewise, the Owner shall not pay the Contractor any additional compensation for early completion nor will the Owner owe the Contractor any compensation should the Owner, its officers, employees, or agents cause the Contractor not to complete earlier than the date required by the Contract Documents.

- h. The proposed project construction schedule shall be presented to the designer no later than fifteen (15) days after written notice to proceed. No application for payment will be processed until this schedule is accepted by the designer and owner.
- i. The approved project construction schedule shall be distributed to all contractors and displayed at the job site by the Project Expediter.
- j. The several contractors shall be responsible for their work activities and shall notify the Project Expediter of any necessary changes or adjustments to their work. The Project Expediter shall maintain the project construction schedule, making biweekly adjustments, updates, corrections, etc., that are necessary to finish the project within the Contract time, keeping all contractors and the designer fully informed. Copy of a bar chart schedule annotated to show the current progress shall be submitted by the Contractor(s) to the designer, along with monthly request for payment. For project requiring CPM schedule, the Contractor shall submit a biweekly report of the status of all activities. The bar chart schedule or status report shall show the actual Work completed to date in comparison with the original Work scheduled for all activities. If any activities of the work of several contractors are behind schedule, the contractor must indicate in writing, what measures will be taken to bring each such activity back on schedule and to ensure that the Contract Completion Date is not exceeded. A plan of action and recovery schedule shall be developed and submitted to the designer by the Project Expediter, when (1) the contractor's report indicates delays, that are in the opinion of the designer or the owner, of sufficient magnitude that the contractor's ability to complete the work by the scheduled completion is brought into question; (2) the updated construction schedule is thirty (30) days behind the planned or baseline schedule and no legitimate time extensions, as determined by the Designer, are in process; and (3) the contractor desires to make changes in the logic (sequencing of work) or the planned duration of future activities of the CPM schedule which, in the opinion of the designer or the owner, are of a major nature. The plan of action, when required shall be submitted to the Owner for review within two (2) business days of the Contractor receiving the Owner's written demand. The recovery schedule, when required, shall be submitted to the Owner within five (5) calendar days of the Contractor's receiving the Owner's written demand. Failure to provide an updated construction schedule or a recovery schedule may be grounds for rejection of payment applications or withholding of funds as set forth in Article 33.
- k. The Project Expediter shall notify each contractor of such events or time frames that are critical to the progress of the job. Such notice shall be timely and reasonable. Should the progress be delayed due to the work of any of the several contractors, it shall be the duty of the Project Expediter to immediately notify the contractor(s) responsible for such delay, the designer, the State Construction Office and other prime contractors. The designer shall determine the contractor(s) who caused the delays and notify the bonding company of the responsible contractor(s) of the delays; and shall make a recommendation to the owner regarding further action.
- l. Designation as Project Expediter entails an additional project control responsibility and does not alter in any way the responsibility of the contractor so designated, nor the

responsibility of the other contractors involved in the project. The project expeditor's Superintendent(s) shall be in attendance at the Project site at all times when work is in progress unless conditions are beyond the control of the Contractor or until termination of the Contract in accordance with the Contract Documents. It is understood that such Superintendent shall be acceptable to the Owner and Designer and shall be the one who will be continued in that capacity for the duration of the project unless he ceases to be on the Contractor's payroll or the Owner otherwise agrees. The Superintendent shall not be employed on any other project for or by the Contractor or by any other entity during the course of the Work. If the Superintendent is employed by the Contractor on another project without the Owner's approval, then the Owner may deduct from the Contractor's monthly general condition costs and amount representing the Superintendent's cost and shall deduct that amount for each month thereafter until the Contractor has the Superintendent back on the Owner's Project full-time.

ARTICLE 15 - SEPARATE CONTRACTS AND CONTRACTOR RELATIONSHIPS

- a. Effective from January 1, 2002, Chapter 143, Article 8, was amended, to allow public contracts to be delivered by the following delivery methods: single-prime, dual (single-prime and separate-prime), construction manager at risk, and alternative contracting method as approved by the State Building Commission. The owner reserves the right to prepare separate specifications, receive separate bids, and award separate contracts for such other major items of work as may be in the best interest of the State. For the purposes of a single prime contract, refer to Article 1 – Definitions.
- b. All contractors shall cooperate with each other in the execution of their work, and shall plan their work in such manner as to avoid conflicting schedules or delay of the work. See Article 14, Construction Supervision.
- c. If any part of contractor's work depends upon the work of another contractor, defects which may affect that work shall be reported to the designer in order that prompt inspection may be made and the defects corrected. Commencement of work by a contractor where such condition exists will constitute acceptance of the other contractor's work as being satisfactory in all respects to receive the work commenced, except as to defects which may later develop. The designer shall be the judge as to the quality of work and shall settle all disputes on the matter between contractors.
- d. Any mechanical or electrical work such as sleeves, inserts, chases, openings, penetrations, etc., which is located in the work of the general contractor shall be built in by the general contractor. The respective mechanical and electrical contractors shall set all sleeves, inserts and other devices that are to be incorporated into the structure in cooperation and under the supervision of the general contractor. The responsibility for the exact location of such items shall be that of the mechanical and/or electrical contractor.
- e. The designer and the owner shall have access to the work whenever it is in preparation and progress and during normal working hours. The contractor shall provide facilities for such access so the designer may perform his functions under the contract documents.
- f. Should a contractor cause damage to the work or property of another contractor, he shall be directly responsible, and upon notice, shall promptly settle the claim or otherwise resolve the dispute.

ARTICLE 16 - SUBCONTRACTS AND SUBCONTRACTORS

- a. Within thirty (30) days after award of the contract, the contractor shall submit to the designer, owner and to the State Construction Office a list giving the names and addresses of subcontractors and equipment and material suppliers he proposes to use, together with the scope of their respective parts of the work. Should any subcontractor be disapproved by the designer or owner, the designer or owner shall submit his reasons for disapproval in writing to the State Construction Office for its consideration with a copy to the contractor. If the State Construction Office concurs with the designer's or owner's recommendation, the contractor shall submit a substitute for approval. The designer and owner shall act promptly in the approval of subcontractors, and when approval of the list is given, no changes of subcontractors will be permitted except for cause or reason considered justifiable by the designer or owner.
- b. The designer will furnish to any subcontractor, upon request, evidence regarding amounts of money paid to the contractor on account of the subcontractor's work.
- c. The contractor is and remains fully responsible for his own acts or omissions as well as those of any subcontractor or of any employee of either. The contractor agrees that no contractual relationship exists between the subcontractor and the owner in regard to the contract, and that the subcontractor acts on this work as an agent or employee of the contractor.
- d. The owner reserves the right to limit the amount of portions of work to be subcontracted as hereinafter specified.

ARTICLE 17 - CONTRACTOR AND SUBCONTRACTOR RELATIONSHIPS

The contractor agrees that the terms of these contract documents shall apply equally to each subcontractor as to the contractor, and the contractor agrees to take such action as may be necessary to bind each subcontractor to these terms. The contractor further agrees to conform to the Code of Ethical Conduct as adopted by the Associated General Contractors of America, Inc., with respect to contractor-subcontractor relationships, and that payments to subcontractors shall be made in accordance with the provisions of G.S. 143-134.1 titled Interest on final payments due to prime contractors: payments to subcontractors.

- a. On all public construction contracts which are let by a board or governing body of the state government or any political subdivision thereof, except contracts let by the Department of Transportation pursuant to G.S. 136-28.1, the balance due prime contractors shall be paid in full within 45 days after respective prime contracts of the project have been accepted by the owner, certified by the architect, engineer or designer to be completed in accordance with terms of the plans and specifications, or occupied by the owner and used for the purpose for which the project was constructed, whichever occurs first. Provided, however, that whenever the architect or consulting engineer in charge of the project determines that delay in completion of the project in accordance with terms of the plans and specifications is the fault of the contractor, the project may be occupied and used for the purposes for which it was constructed without payment of any interest on amounts withheld past the 45 day limit. No payment shall be delayed because of the failure of another prime contractor on such project to complete his contract. Should final payment to any prime contractor beyond the date such contracts have been certified to be completed by the designer or architect, accepted by the owner, or occupied by the owner and used for the purposes for which the project was constructed, be delayed by more than 45 days, said prime contractor shall be paid interest, beginning on the 46th day, at the rate of one percent (1%) per month or fraction thereof unless a lower rate is

agreed upon on such unpaid balance as may be due. In addition to the above final payment provisions, periodic payments due a prime contractor during construction shall be paid in accordance with the payment provisions of the contract documents or said prime contractor shall be paid interest on any such unpaid amount at the rate stipulated above for delayed final payments. Such interest shall begin on the date the payment is due and continue until the date on which payment is made. Such due date may be established by the terms of the contract. Funds for payment of such interest on state-owned projects shall be obtained from the current budget of the owning department, institution or agency. Where a conditional acceptance of a contract exists, and where the owner is retaining a reasonable sum pending correction of such conditions, interest on such reasonable sum shall not apply.

- b. Within seven days of receipt by the prime contractor of each periodic or final payment, the prime contractor shall pay the subcontractor based on work completed or service provided under the subcontract. Should any periodic or final payment to the subcontractor be delayed by more than seven days after receipt of periodic or final payment by the prime contractor, the prime contractor shall pay the subcontractor interest, beginning on the eighth day, at the rate of one percent (1%) per month or fraction thereof on such unpaid balance as may be due.
- c. The percentage of retainage on payments made by the prime contractor to the subcontractor shall not exceed the percentage of retainage on payments made by the owner to the prime contractor. Any percentage of retainage on payments made by the prime contractor to the subcontractor that exceeds the percentage of retainage on payments made by the owner to the prime contractor shall be subject to interest to be paid by the prime contractor to the subcontractor at the rate of one percent (1%) per month or fraction thereof.
- d. Nothing in this section shall prevent the prime contractor at the time of application and certification to the owner from withholding application and certification to the owner for payment to the subcontractor for unsatisfactory job progress; defective construction not remedied; disputed work; third-party claims filed or reasonable evidence that claim will be filed; failure of subcontractor to make timely payments for labor, equipment and materials; damage to prime contractor or another subcontractor; reasonable evidence that subcontract cannot be completed for the unpaid balance of the subcontract sum; or a reasonable amount for retainage not to exceed the initial percentage retained by owner.

ARTICLE 18 - DESIGNER'S STATUS

- a. The designer shall provide general administration of the performance of construction contracts, including liaison and necessary inspection of the work to ensure compliance with plans and specifications. He is the agent of the owner only for the purpose of constructing this work and to the extent stipulated in the contract documents. He has authority to direct work to be performed, to stop work, to order work removed, or to order corrections of faulty work, where any such action by the designer may be necessary to assure successful completion of the work.
- b. The designer is the impartial interpreter of the contract documents, and, as such, he shall exercise his powers under the contract to enforce faithful performance by both the owner and the contractor, taking sides with neither.
- c. Should the designer cease to be employed on the work for any reason whatsoever, then the owner shall employ a competent replacement who shall assume the status of the former designer.

- d. The designer and his consultants will make inspections of the project. He will inspect the progress, the quality and the quantity of the work.
- e. The designer and the owner shall have access to the work whenever it is in preparation and progress during normal working hours. The contractor shall provide facilities for such access so the designer and owner may perform their functions under the contract documents.
- f. Based on the designer's inspections and evaluations of the project, the designer shall issue interpretations, directives and decisions as may be necessary to administer the project. His decisions relating to artistic effect and technical matters shall be final, provided such decisions are within the limitations of the contract.

ARTICLE 19 - CHANGES IN THE WORK

- a. The owner may have changes made in the work covered by the contract. These changes will not invalidate and will not relieve or release the contractor from any guarantee given by him pertinent to the contract provisions. These changes will not affect the validity of the guarantee bond and will not relieve the surety or sureties of said bond. All extra work shall be executed under conditions of the original contract.
- b. Except in an emergency endangering life or property, no change shall be made by the contractor except upon receipt of approved change order or written field order from the designer, countersigned by the owner and the state construction office authorizing such change. No claim for adjustments of the contract price shall be valid unless this procedure is followed.

A field order, transmitted by fax, electronically, or hand delivered, may be used where the change involved impacts the critical path of the work. A formal change order shall be issued as expeditiously as possible.

In the event of emergency endangering life or property, the contractor may be directed to proceed on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the designer or owner, a correct account of costs together with all proper invoices, payrolls and supporting data. Upon completion of the work the change order will be prepared as outlined under either Method "c(1)" or Method "c(2)" or both.

- c. In determining the values of changes, either additive or deductive, contractors are restricted to the use of the following methods:
 - 1. Where the extra work involved is covered by unit prices quoted in the proposal, or subsequently agreed to by the Contractor, Designer, Owner and State Construction Office the value of the change shall be computed by application of unit prices based on quantities, estimated or actual as agreed of the items involved, except in such cases where a quantity exceeds the estimated quantity allowance in the contract by one hundred percent (100%) or more. In such cases, either party may elect to proceed under subparagraph c2 herein. If neither party elects to proceed under c2, then unit prices shall apply.
 - 2. The contracting parties shall negotiate and agree upon the equitable value of the change prior to issuance of the change order, and the change order shall stipulate the corresponding lump sum adjustment to the contract price.

- d. Under Paragraph "b" and Methods "c(2)" above, the allowances for overhead and profit combined shall be as follows: all contractors (the single contracting entity (prime), his subcontractors (1st tier subs), or their sub-subcontractors (2nd tier subs, 3rd tier subs, etc)) shall be allowed a maximum of 10% on work they each self-perform; the prime contractor shall be allowed a maximum of 5% on contracted work of his 1st tier sub; 1st tier, 2nd tier, 3rd tier, etc contractors shall be allowed a maximum of 2.5% on the contracted work of their subs. ; Under Method "c(1)", no additional allowances shall be made for overhead and profit. In the case of deductible change orders, under Method "c(2)" and Paragraph (b) above, the contractor shall include no less than five percent (5%) profit, but no allowances for overhead.
- e. The term "net cost" as used herein shall mean the difference between all proper cost additions and deductions. The "cost" as used herein shall be limited to the following:
1. The actual costs of materials and supplies incorporated or consumed as part of the work;
 2. The actual costs of labor expended on the project site; labor expended in coordination, change order negotiation, record document maintenance, shop drawing revision or other tasks necessary to the administration of the project are considered overhead whether they take place in an office or on the project site.
 3. The actual costs of labor burden, limited to the costs of social security (FICA) and Medicare/Medicaid taxes; unemployment insurance costs; health/dental/vision insurance premiums; paid employee leave for holidays, vacation, sick leave, and/or petty leave, not to exceed a total of 30 days per year; retirement contributions; worker's compensation insurance premiums; and the costs of general liability insurance when premiums are computed based on payroll amounts; the total of which shall not exceed thirty percent (30%) of the actual costs of labor;
 4. The actual costs of rental for tools, excluding hand tools; equipment; machinery; and temporary facilities required for the work;
 5. The actual costs of premiums for bonds, insurance, permit fees, and sales or use taxes related to the work.
- Overtime and extra pay for holidays and weekends may be a cost item only to the extent approved by the owner.
- f. Should concealed conditions be encountered in the performance of the work below grade, or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the contract documents, the contract sum and time for completion may be equitably adjusted by change order upon claim by either party made within thirty (30) days after the condition has been identified. The cost of such change shall be arrived at by one of the foregoing methods. All change orders shall be supported by a unit cost breakdown showing method of arriving at net cost as defined above.
- g. In all change orders, the procedure will be for the designer to request proposals for the change order work in writing. The contractor will provide such proposal and supporting data in suitable format. The designer shall verify correctness. Delay in the processing of the change order due to lack of proper submittal by the contractor of all required supporting data shall not constitute grounds for a time extension or basis of a claim. Within fourteen (14) days after receipt of the contractor's accepted proposal including all supporting documentation required by the designer, the designer shall prepare the change order and forward to the contractor for his signature or otherwise respond, in writing, to

the contractor's proposal. Within seven (7) days after receipt of the change order executed by the contractor, the designer shall, certify the change order by his signature, and forward the change order and all supporting data to the owner for the owner's signature. The owner shall execute the change order and forward to the State Construction Office for final approval, within seven (7) days of receipt. The State Construction Office shall act on the change order within seven (7) days. In case of emergency or extenuating circumstances, approval of changes may be obtained verbally by telephone or field orders approved by all parties, then shall be substantiated in writing as outlined under normal procedure.

- h. At the time of signing a change order, the contractor shall be required to certify as follows:

"I certify that my bonding company will be notified forthwith that my contract has been changed by the amount of this change order, and that a copy of the approved change order will be mailed upon receipt by me to my surety."

- i. A change order, when issued, shall be full compensation, or credit, for the work included, omitted or substituted. It shall show on its face the adjustment in time for completion of the project as a result of the change in the work.
- j. If, during the progress of the work, the owner requests a change order and the contractor's terms are unacceptable, the owner, with the approval of the State Construction Office, may require the contractor to perform such work on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the Designer or owner, a correct account of cost together with all proper invoices, payrolls and supporting data. Upon completion of the work a change order will be prepared with allowances for overhead and profit per paragraph d. above and "net cost" and "cost" per paragraph e. above. Without prejudice, nothing in this paragraph shall preclude the owner from performing or to have performed that portion of the work requested in the change order.

ARTICLE 20 - CLAIMS FOR EXTRA COST

- a. Should the contractor consider that as a result of instructions given by the designer, he is entitled to extra cost above that stated in the contract, he shall give written notice thereof to the designer within seven (7) days without delay. The written notice shall clearly state that a claim for extra cost is being made and shall provide a detailed justification for the extra cost. The contractor shall not proceed with the work affected until further advised, except in emergency involving the safety of life or property, which condition is covered in Article 19(b) and Article 11(h). No claims for extra compensation shall be considered unless the claim is so made. The designer shall render a written decision within seven (7) days of receipt of claim.
- b. The contractor shall not act on instructions received by him from persons other than the designer, and any claims for extra compensation or extension of time on account of such instruction will not be honored. The designer shall not be responsible for misunderstandings claimed by the contractor of verbal instructions which have not been confirmed in writing, and in no case shall instructions be interpreted as permitting a departure from the contract documents unless such instruction is confirmed in writing and supported by a properly authorized change order.
- c. Should a claim for extra compensation that complies with the requirements of (a) above by the contractor and is denied by the designer or owner, and cannot be resolved by a

representative of the State Construction Office, the contractor may request a mediation in connection with GS 143-128(f1) in the dispute resolution rules adopted by the State Building Commission (1 N.C.A.C. 30H .0101 through .1001). If the contractor is unable to resolve its claim as a result of mediation, the contractor may pursue the claim in accordance with the provisions of G.S. 143-135.3, or G.S. 143-135.6 where Community Colleges are the owner, and the following:

1. A contractor who has not completed a contract with a board for construction or repair work and who has not received the amount he claims is due under the contract may submit a verified written claim to the director of the State Construction Office of the Department of Administration for the amount the contractor claims is due. The director may deny, allow or compromise the claim, in whole or in part. A claim under this subsection is not a contested case under Chapter 150B of the General Statutes.
2.
 - (a) A contractor who has completed a contract with a board for construction or repair work and who has not received the amount he claims is due under the contract may submit a verified written claim to the director of the State Construction Office of the Department of Administration for the amount the contractor claims is due. The claim shall be submitted within sixty (60) days after the contractor receives a final statement of the board's disposition of his claim and shall state the factual basis for the claim.
 - (b) The director shall investigate a submitted claim within ninety (90) days of receiving the claim, or within any longer time period upon which the director and the contractor agree. The contractor may appear before the director, either in person or through counsel, to present facts and arguments in support of his claim. The director may allow, deny or compromise the claim, in whole or in part. The director shall give the contractor a written statement of the director's decision on the contractor's claim.
 - (c) A contractor who is dissatisfied with the director's decision on a claim submitted under this subsection may commence a contested case on the claim under Chapter 150B of the General Statutes. The contested case shall be commenced within sixty (60) days of receiving the director's written statement of the decision.
 - (d) As to any portion of a claim that is denied by the director, the contractor may, in lieu of the procedures set forth in the preceding subsection of this section, within six (6) months of receipt of the director's final decision, institute a civil action for the sum he claims to be entitled to under the contract by filing a verified complaint and the issuance of a summons in the Superior Court of Wake County or in the superior court of any county where the work under the contract was performed. The procedure shall be the same as in all civil actions except that all issues shall be tried by the judge, without a jury.

ARTICLE 21 - MINOR CHANGES IN THE WORK

The designer will have the authority to order minor changes in the work not involving an adjustment in the contract sum or time for completion, and not inconsistent with the intent of the contract documents. Such changes shall be effected by written order, copied to the State Construction Office, and shall be binding on the owner and the contractor.

ARTICLE 22 - UNCORRECTED FAULTY WORK

Should the correction of faulty or damaged work be considered inadvisable or inexpedient by the owner and the designer, the owner shall be reimbursed by the contractor. A change order will be issued to reflect a reduction in the contract sum.

ARTICLE 23 - TIME OF COMPLETION, DELAYS, EXTENSION OF TIME

- a. The time of completion is stated in the Supplementary General Conditions and in the Form of Construction Contract. The Project Expediter, upon notice of award of contract, shall prepare a construction schedule to complete the project within the time of completion as required by Article 14.
- b. The contractors shall commence work to be performed under this agreement on a date to be specified in a written Notice to Proceed from the designer and shall fully complete all work hereunder within the time of completion stated. Time is of the essence and the contractor acknowledges the Owner will likely suffer financial damage for failure to complete the work within the time of completion. For each day in excess of the above number of days, the contractor(s) shall pay the owner the sum stated as liquidated damages reasonably estimated in advance to cover the losses to be incurred by the owner by reason of failure of said contractor(s) to complete the work within the time specified, such time being in the essence of this contract and a material consideration thereof.
- c. In the event of multiple prime contractors, the designer shall be the judge as to the division of responsibility between the contractor(s), based on the construction schedule, weekly reports and job records, and shall apportion the amount of liquidated damages to be paid by each of them, according to delay caused by any or all of them.
- d. If the contractor is delayed at any time in the progress of his work solely by any act or negligence of the owner, the designer, or by any employee of either; by any separate contractor employed by the owner; by changes ordered in the work; by labor disputes at the project site; by abnormal weather conditions not reasonably anticipated for the locality where the work is performed; by unavoidable casualties; by any causes beyond the contractor's control; or by any other causes which the designer and owner determine may justify the delay, then the contract time may be extended by change order only for the time which the designer and owner may determine is reasonable.

Time extensions will not be granted for rain, wind, snow or other natural phenomena of normal intensity for the locality where work is performed. For purpose of determining extent of delay attributable to unusual weather phenomena, a determination shall be made by comparing the weather for the contract period involved with the average of the preceding five (5) year climatic range during the same time interval based on the National Oceanic and Atmospheric Administration National Weather Service statistics for the locality where work is performed and on daily weather logs kept on the job site by the contractor reflecting the effect of the weather on progress of the work and initialed by the designer's representative. No weather delays shall be considered after the building is dried in unless work claimed to be delayed is on the critical path of the baseline schedule or approved updated schedule. Time extensions for weather delays, acts of God, labor disputes, fire, delays in transportation, unavoidable casualties or other delays which are beyond the control of the Owner do not entitle the Contractor to compensable damages for delays. Any contractor claim for compensable damages for delays is limited to delays caused solely by the owner or its agents. Contractor caused delays shall be accounted for before owner or designer caused delays in the case of concurrent delays.

- e. Request for extension of time shall be made in writing to the designer, copies to the owner and SCO, within twenty (20) days following cause of delay. In case of continuing cause for delay, the Contractor shall notify the Designer to the designer, copies to the owner and SCO, of the delay within 20 days of the beginning of the delay and only one claim is necessary.
- f. The contractor shall notify his surety in writing of extension of time granted.
- g. No claim for time extension shall be allowed on account of failure of the designer to furnish drawings or instructions until twenty (20) days after demand for such drawings and/or instructions. See Article 5c. Demand must be in written form clearly stating the potential for delay unless the drawings or instructions are provided. Any delay granted will begin after the twenty (20) day demand period is concluded.

ARTICLE 24 - PARTIAL UTILIZATION/BENEFICIAL OCCUPANCY

- a. The owner may desire to occupy or utilize all or a portion of the project prior to the completion of the project.
- b. Should the owner request a utilization of a building or portion thereof, the designer shall perform a designer final inspection of area after being notified by the contractor that the area is ready for such. After the contractor has completed designer final inspection punch list and the designer has verified, then the designer shall schedule a beneficial occupancy inspection at a time and date acceptable to the owner, contractor(s) and State Construction Office. If beneficial occupancy is granted by the State Construction Office, in such areas the following will be established:
 - 1. The beginning of guarantees and warranties period for the equipment necessary to support. in the area.
 - 2. The owner assumes all responsibilities for utility costs for entire building.
 - 2. Contractor will obtain consent of surety.
 - 3. Contractor will obtain endorsement from insurance company permitting beneficial occupancy.
- c. The owner shall have the right to exclude the contractor from any part of the project which the designer has so certified to be substantially complete, but the owner will allow the contractor reasonable access to complete or correct work to bring it into compliance with the contract.
- d. Occupancy by the owner under this article will in no way relieve the contractor from his contractual requirement to complete the project within the specified time. The contractor will not be relieved of liquidated damages because of beneficial occupancy. The designer may prorate liquidated damages based on the percentage of project occupied.

ARTICLE 25 - FINAL INSPECTION, ACCEPTANCE, AND PROJECT CLOSEOUT

- a. Upon notification from the contractor(s) that the project is complete and ready for inspection, the designer shall make a Designer final inspection to verify that the project is complete and ready for SCO final inspection. Prior to SCO final inspection, the contractor(s) shall complete all items requiring corrective measures noted at the Designer

final inspection. The designer shall schedule a SCO final inspection at a time and date acceptable to the owner, contractor(s) and State Construction Office.

- b. At the SCO final inspection, the designer and his consultants shall, if job conditions warrant, record a list of items that are found to be incomplete or not in accordance with the contract documents. At the conclusion of the SCO final inspection, the designer and State Construction Office representative shall make one of the following determinations:
 - 1. That the project is completed and accepted.
 - 2. That the project will be accepted subject to the correction of the list of discrepancies (punch list). All punch list items must be completed within thirty (30) days of SCO final inspection or the owner may invoke Article 28, Owner's Right to Do Work.
 - 4. That the project is not complete and another date for a SCO final inspection will be established.
- c. Within fourteen (14) days of final acceptance per Paragraph b1 or within fourteen (14) days after completion of punch list per Paragraph b2 above, the designer shall certify the work and issue applicable certificate(s) of compliance.
- d. Any discrepancies listed or discovered after the date of SCO final inspection and acceptance under Paragraphs b1 or b2 above shall be handled in accordance with Article 42, Guarantee.
- f. The final acceptance date will establish the following:
 - 1. The beginning of guarantees and warranties period.
 - 2. The date on which the contractor's insurance coverage for public liability, property damage and builder's risk may be terminated.
 - 3. That no liquidated damages (if applicable) shall be assessed after this date.
 - 4. The termination date of utility cost to the contractor.
- g. **Prior to issuance of final acceptance date, the contractor shall have his authorized representatives visit the project and give full instructions to the designated personnel regarding operating, maintenance, care, and adjustment of all equipment and special construction elements. In addition, the contractor shall provide to the owner a complete instructional video (media format acceptable to the owner) on the operation, maintenance, care and adjustment of all equipment and special construction elements.**

ARTICLE 26 - CORRECTION OF WORK BEFORE FINAL PAYMENT

- a. Any work, materials, fabricated items or other parts of the work which have been condemned or declared not in accordance with the contract by the designer shall be promptly removed from the work site by the contractor, and shall be immediately replaced by new work in accordance with the contract at no additional cost to the owner. Work or property of other contractors or the owner, damaged or destroyed by virtue of such faulty work, shall be made good at the expense of the contractor whose work is faulty.

- b. Correction of condemned work described above shall commence within twenty-four (24) hours after receipt of notice from the designer, and shall make satisfactory progress, as determined by the designer, until completed.
- c. Should the contractor fail to proceed with the required corrections, then the owner may complete the work in accordance with the provisions of Article 28.

ARTICLE 27 - CORRECTION OF WORK AFTER FINAL PAYMENT

See Article 35, Performance Bond and Payment Bond, and Article 42, Guarantee. Neither the final certificate, final payment, occupancy of the premises by the owner, nor any provision of the contract, nor any other act or instrument of the owner, nor the designer, shall relieve the contractor from responsibility for negligence, or faulty material or workmanship, or failure to comply with the drawings and specifications. Contractor shall correct or make good any defects due thereto and repair any damage resulting there from, which may appear during the guarantee period following final acceptance of the work except as stated otherwise under Article 42, Guarantee. The owner will report any defects as they may appear to the contractor and establish a time limit for completion of corrections by the contractor. The owner will be the judge as to the responsibility for correction of defects.

ARTICLE 28 - OWNER'S RIGHT TO DO WORK

If, during the progress of the work or during the period of guarantee, the contractor fails to prosecute the work properly or to perform any provision of the contract, the owner, after seven (7) days' written notice sent by certified mail, return receipt requested, to the contractor from the designer, may perform or have performed that portion of the work. The cost of the work may be deducted from any amounts due or to become due to the contractor, such action and cost of same having been first approved by the designer. Should the cost of such action of the owner exceed the amount due or to become due the contractor, then the contractor or his surety, or both, shall be liable for and shall pay to the owner the amount of said excess.

ARTICLE 29 - ANNULMENT OF CONTRACT

If the contractor fails to begin the work under the contract within the time specified, or the progress of the work is not maintained on schedule, or the work is not completed within the time above specified, or fails to perform the work with sufficient workmen and equipment or with sufficient materials to ensure the prompt completion of said work, or shall perform the work unsuitably or shall discontinue the prosecution of the work, or if the contractor shall become insolvent or be declared bankrupt or commit any act of bankruptcy or insolvency, or allow any final judgment to stand against him unsatisfied for a period of forty-eight (48) hours, or shall make an assignment for the benefit of creditors, or for any other cause whatsoever shall not carry on the work in an acceptable manner, the owner may give notice in writing, sent by certified mail, return receipt requested, to the contractor and his surety of such delay, neglect or default, specifying the same, and if the contractor within a period of seven (7) days after such notice shall not proceed in accordance therewith, then the owner shall, declare this contract in default, and, thereupon, the surety shall promptly take over the work and complete the performance of this contract in the manner and within the time frame specified. In the event the surety shall fail to take over the work to be done under this contract within seven (7) days after being so notified and notify the owner in writing, sent by certified mail, return receipt requested, that he is taking the same over and stating that he will diligently pursue and complete the same, the owner shall have full power and authority, without violating the contract, to take the prosecution of the work out of the hands of said contractor, to appropriate or use any or all contract materials and equipment on the grounds as may be suitable and acceptable and may enter into an agreement, either by public letting or negotiation, for the completion of said contract according to the terms and provisions thereof

or use such other methods as in his opinion shall be required for the completion of said contract in an acceptable manner. All costs and charges incurred by the owner, together with the costs of completing the work under contract, shall be deducted from any monies due or which may become due said contractor and surety. In case the expense so incurred by the owner shall be less than the sum which would have been payable under the contract, if it had been completed by said contractor, then the said contractor and surety shall be entitled to receive the difference, but in case such expense shall exceed the sum which would have been payable under the contract, then the contractor and the surety shall be liable and shall pay to the owner the amount of said excess.

ARTICLE 30 - CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE THE CONTRACT

- a. Should the work be stopped by order of a court having jurisdiction, or by order of any other public authority for a period of three months, due to cause beyond the fault or control of the contractor, or if the owner should fail or refuse to make payment on account of a certificate issued by the designer within forty-five (45) days after receipt of same, then the contractor, after fifteen (15) days' written notice sent by certified mail, return receipt requested, to the owner and the designer, may suspend operations on the work or terminate the contract.
- b. The owner shall be liable to the contractor for the cost of all materials delivered and work performed on this contract plus 10 percent overhead and profit and shall make such payment. The designer shall be the judge as to the correctness of such payment.

ARTICLE 31 - REQUEST FOR PAYMENT

- a. Not later than the fifth day of the month, the contractor shall submit to the designer a request for payment for work done during the previous month. The request shall be in the form agreed upon between the contractor and the designer, but shall show substantially the value of work done and materials delivered to the site during the period since the last payment, and shall sum up the financial status of the contract with the following information:
 1. Total of contract including change orders.
 2. Value of work completed to date.
 3. Less five percent (5%) retainage, provided however, that after fifty percent (50%) of the contractor's work has been satisfactorily completed on schedule, with approval of the owner and the State Construction Office and written consent of the surety, further requirements for retainage will be waived only so long as work continues to be completed satisfactorily and on schedule.
 4. Less previous payments.
 5. Current amount due.
- b. The contractor, upon request of the designer, shall substantiate the request with invoices of vouchers or payrolls or other evidence.
- c. Prior to submitting the first request, the contractor shall prepare for the designer a schedule showing a breakdown of the contract price into values of the various parts of the work, so arranged as to facilitate payments to subcontractors in accordance with Article 17, Contractor and Subcontractor Relationships. The contractor(s) shall list the

value of each subcontractor and supplier, identifying each minority business subcontractor and supplier as listed in Affidavit C, if applicable.

- d. When payment is made on account of stored materials and equipment, such materials must be stored on the owner's property, and the requests for payments shall be accompanied by invoices or bills of sale or other evidence to establish the owner's title to such materials and equipment. Such payments will be made only for materials that have been customized or fabricated specifically for this project. Raw materials or commodity products including but not limited to piping, conduit, CMU, metal studs and gypsum board may not be submitted. Responsibility for such stored materials and equipment shall remain with the contractor regardless of ownership title. Such stored materials and equipment shall not be removed from the owner's property. Should the space for storage on-site be limited, the contractor, at his option, shall be permitted to store such materials and/or equipment in a suitable space off-site. Should the contractor desire to include any such materials or equipment in his application for payment, they must be stored in the name of the owner in an independent, licensed, bonded warehouse approved by the designer, owner and the State Construction Office and located as close to the site as possible. The warehouse selected must be approved by the contractor's bonding and insurance companies; the material to be paid for shall be assigned to the owner and shall be inspected by the designer. Upon approval by the designer, owner and SCO of the storage facilities and materials and equipment, payment therefore will be certified. Responsibility for such stored materials and equipment shall remain with the contractor. Such stored materials and equipment shall not be moved except for transportation to the project site. Under certain conditions, the designer may approve storage of materials at the point of manufacture, which conditions shall be approved by the designer, the owner and the State Construction Office prior to approval for the storage and shall include an agreement by the storing party which unconditionally gives the State absolute right to possession of the materials at anytime. Bond, security and insurance protection shall continue to be the responsibility of the contractor(s).
- e. In the event of beneficial occupancy, retainage of funds due the contractor(s) may be reduced with the approval of the State Construction Office to an equitable amount to cover the list of items to be completed or corrected. Retainage may not be reduced to less than two and one-half (2 1/2) times the estimated value of the work to be completed or corrected. Reduction of retainage must be with the consent and approval of the contractor's bonding company.

ARTICLE 32 - CERTIFICATES OF PAYMENT AND FINAL PAYMENT

- a. Within five (5) days from receipt of request for payment from the contractor, the designer shall issue and forward to the owner a certificate for payment. This certificate shall indicate the amount requested or as approved by the designer. If the certificate is not approved by the designer, he shall state in writing to the contractor and the owner his reasons for withholding payment.
- b. No certificate issued or payment made shall constitute an acceptance of the work or any part thereof. The making and acceptance of final payment shall constitute a waiver of all claims by the owner except:
 - 1. Claims arising from unsettled liens or claims against the contractor.
 - 2. Faulty work or materials appearing after final payment.
 - 3. Failure of the contractor to perform the work in accordance with drawings and specifications, such failure appearing after payment.

4. As conditioned in the performance bond and payment bond.
- c. The making and acceptance of final payment shall constitute a waiver of all claims by the contractor except those claims previously made and remaining unsettled (Article 20(c)).
- d. Prior to submitting request for final payment to the designer for approval, the contractor shall fully comply with all requirements specified in the “project closeout” section of the specifications. These requirements include but not limited to the following:
 1. Submittal of Product and Operating Manuals, Warranties and Bonds, Guarantees, Maintenance Agreements, As-Built Drawings, Certificates of Inspection or Approval from agencies having jurisdiction. (The designer must approve the Manuals prior to delivery to the owner).
 2. Transfer of Required attic stock material and all keys in an organized manner.
 3. Record of Owner’s training.
 4. Resolution of any final inspection discrepancies.
 5. Granting access to Contractor’s records, if Owner’s internal auditors have made a request for such access pursuant to Article 52.
- e. The contractor shall forward to the designer, the final application for payment along with the following documents:
 1. List of minority business subcontractors and material suppliers showing breakdown of contract amounts and total actual payments to subs and material suppliers.
 2. Affidavit of Release of Liens.
 3. Affidavit of contractors of payment to material suppliers and subcontractors. (See Article 36).
 4. Consent of Surety to Final Payment.
 5. Certificates of state agencies required by state law.
- f. The designer will not authorize final payment until the work under contract has been certified by designer, certificates of compliance issued, and the contractor has complied with the closeout requirements. The designer shall forward the contractor’s final application for payment to the owner along with respective certificate(s) of compliance required by law.

ARTICLE 33 - PAYMENTS WITHHELD

- a. The designer with the approval of the State Construction Office may withhold payment for the following reasons:
 1. Faulty work not corrected.

2. The unpaid balance on the contract is insufficient to complete the work in the judgment of the designer.
 3. To provide for sufficient contract balance to cover liquidated damages that will be assessed.
- b. The secretary of the Department of Administration may authorize the withholding of payment for the following reasons:
 1. Claims filed against the contractor or evidence that a claim will be filed.
 2. Evidence that subcontractors have not been paid.
 - c. The Owner may withhold all or a portion of Contractor's general conditions costs set forth in the approved schedule of values, if Contractor has failed to comply with: (1) a request to access its records by Owner's internal auditors pursuant to Article 52; (2) a request for a plan of action and/or recovery schedule under Article 14.j or provide The Owner; (3) a request to provide an electronic copies of Contractor's baseline schedule, updates with all logic used to create the schedules in the original format of the scheduling software; and (4) Contractor's failure to have its Superintendent on the Project full-time; (
 - d. When grounds for withholding payments have been removed, payment will be released. Delay of payment due the contractor without cause will make owner liable for payment of interest to the contractor in accordance with G.S. 143-134.1. As provided in G.S.143-134.1(e) the owner shall not be liable for interest on payments withheld by the owner for unsatisfactory job progress, defective construction not remedied, disputed work, or third-party claims filed against the owner or reasonable evidence that a third-party claim will be filed.

ARTICLE 34 - MINIMUM INSURANCE REQUIREMENTS

The work under this contract shall not commence until the contractor has obtained all required insurance and verifying certificates of insurance have been approved in writing by the owner. These certificates shall document that coverages afforded under the policies will not be cancelled, reduced in amount or coverages eliminated until at least thirty (30) days after mailing written notice, by certified mail, return receipt requested, to the insured and the owner of such alteration or cancellation. If endorsements are needed to comply with the notification or other requirements of this article copies of the endorsements shall be submitted with the certificates.

a. Worker's Compensation and Employer's Liability

The contractor shall provide and maintain, until final acceptance, workmen's compensation insurance, as required by law, as well as employer's liability coverage with minimum limits of \$100,000.

b. Public Liability and Property Damage

The contractor shall provide and maintain, until final acceptance, comprehensive general liability insurance, including coverage for premises operations, independent contractors, completed operations, products and contractual exposures, as shall protect such contractors from claims arising out of any bodily injury, including accidental death, as well as from claims for property damages which may arise from operations under this contract, whether such operations be by the contractor or by any subcontractor, or by

anyone directly or indirectly employed by either of them and the minimum limits of such insurance shall be as follows:

Bodily Injury:	\$500,000 per occurrence
Property Damage:	\$100,000 per occurrence / \$300,000 aggregate

In lieu of limits listed above, a \$500,000 combined single limit shall satisfy both conditions.

Such coverage for completed operations must be maintained for at least two (2) years following final acceptance of the work performed under the contract.

c. Property Insurance (Builder's Risk/Installation Floater)

The contractor shall purchase and maintain property insurance until final acceptance, upon the entire work at the site to the full insurable value thereof. This insurance shall include the interests of the owner, the contractor, the subcontractors and sub-subcontractors in the work and shall insure against the perils of fire, wind, rain, flood, extended coverage, and vandalism and malicious mischief. If the owner is damaged by failure of the contractor to purchase or maintain such insurance, then the contractor shall bear all reasonable costs properly attributable thereto; the contractor shall effect and maintain similar property insurance on portions of the work stored off the site when request for payment per articles so includes such portions.

d. Deductible

Any deductible, if applicable to loss covered by insurance provided, is to be borne by the contractor.

e. Other Insurance

The contractor shall obtain such additional insurance as may be required by the owner or by the General Statutes of North Carolina including motor vehicle insurance, in amounts not less than the statutory limits.

f. Proof of Carriage

The contractor shall furnish the owner with satisfactory proof of carriage of the insurance required before written approval is granted by the owner.

ARTICLE 35 - PERFORMANCE BOND AND PAYMENT BOND

- a. Each contractor shall furnish a performance bond and payment bond executed by a surety company authorized to do business in North Carolina. The bonds shall be in the full contract amount. Bonds shall be executed in the form bound with these specifications.
- b. All bonds shall be countersigned by an authorized agent of the bonding company who is licensed to do business in North Carolina.

ARTICLE 36 - CONTRACTOR'S AFFIDAVIT

The final payment of retained amount due the contractor on account of the contract shall not become due until the contractor has furnished to the owner through the designer an affidavit signed, sworn and notarized to the effect that all payments for materials, services or subcontracted work in connection with his contract have been satisfied, and that no claims or

liens exist against the contractor in connection with this contract. In the event that the contractor cannot obtain similar affidavits from subcontractors to protect the contractor and the owner from possible liens or claims against the subcontractor, the contractor shall state in his affidavit that no claims or liens exist against any subcontractor to the best of his (the contractor's) knowledge, and if any appear afterward, the contractor shall save the owner harmless.

ARTICLE 37 - ASSIGNMENTS

The contractor shall not assign any portion of this contract nor subcontract in its entirety. Except as may be required under terms of the performance bond or payment bond, no funds or sums of money due or become due the contractor under the contract may be assigned.

ARTICLE 38 - USE OF PREMISES

- a. The contractor(s) shall confine his apparatus, the storage of materials and the operations of his workmen to limits indicated by law, ordinances, permits or directions of the designer and owner and shall not exceed those established limits in his operations.
- b. The contractor(s) shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety.
- c. The contractor(s) shall enforce the designer's and owner's instructions regarding signs, advertisements, fires and smoking.
- d. No firearms, any type of alcoholic beverages, or drugs (other than those prescribed by a physician) will be permitted at the job site.

ARTICLE 39 - CUTTING, PATCHING AND DIGGING

- a. The contractor shall do all cutting, fitting or patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of other contractors shown upon or reasonably implied by the drawings and specifications for the completed structure, as the designer may direct.
- b. Any cost brought about by defective or ill-timed work shall be borne by the party responsible therefor.
- c. No contractor shall endanger any work of another contractor by cutting, digging or other means. No contractor shall cut or alter the work of any other contractor without the consent of the designer and the affected contractor(s).

ARTICLE 40 - UTILITIES, STRUCTURES, SIGNS

- a. The contractor shall provide necessary and adequate facilities for water, electricity, gas, oil, sewer and other utility services which maybe necessary and required for completion of the project including all utilities required for testing, cleaning, balancing, and sterilization of designated plumbing, mechanical and electrical systems. Any permanent meters installed shall be listed in the contractor's name until work has a final acceptance. The contractor will be solely responsible for all utility costs prior to final acceptance. Contractor shall contact all affected utility companies prior to bid to determine their requirements to provide temporary and permanent service and include all costs associated with providing those services in their bid. Coordination of the work of the utility companies during construction is the sole responsibility of the contractor.

- b. Meters shall be relisted in the owner's name on the day following final acceptance of the Project Expediter's work, and the owner shall pay for services used after that date.
- c. The owner shall be reimbursed for all metered utility charges after the meter is relisted in the owner's name and prior to completion and acceptance of the work of **all** contractors. Reimbursement shall be made by the contractor whose work has not been completed and accepted. If the work of two or more contractors has not been completed and accepted, reimbursement to the owner shall be paid by the contractors involved on the basis of assessments by the designer.
- d. Prior to the operation of permanent systems, the Project Expediter will provide temporary power, lighting, water, and heat to maintain space temperature above freezing, as required for construction operations.
- e. All contractors shall have the permanent building systems in sufficient readiness for furnishing temporary climatic control at the time a building is enclosed and secured. The HVAC systems shall maintain climatic control throughout the enclosed portion of the building sufficient to allow completion of the interior finishes of the building. A building shall be considered enclosed and secured when windows, doorways (exterior, mechanical, and electrical equipment rooms), and hardware are installed; and other openings have protection which will provide reasonable climatic control. The appropriate time to start the mechanical systems and climatic condition shall be jointly determined by the contractor(s), the designer and owner. Use of the equipment in this manner shall be subject to the approval of the Designer and owner and shall in no way affect the warranty requirements of the contractor(s).
- f. The electrical contractor shall have the building's permanent power wiring distribution system in sufficient readiness to provide power as required by the HVAC contractor for temporary climatic control.
- g. The electrical contractor shall have the building's permanent lighting system ready at the time the general contractor begins interior painting and shall provide adequate lighting in those areas where interior painting and finishing is being performed.
- h. Each prime contractor shall be responsible for his permanently fixed service facilities and systems in use during progress of the work. The following procedures shall be strictly adhered to:
 - 1. Prior to final acceptance of work by the State Construction Office, each contractor shall remove and replace any parts of the permanent building systems damaged through use during construction.
 - 2. Temporary filters as recommended by the equipment manufacturer in order to keep the equipment and ductwork clean and free of dust and debris shall be installed in each of the heating and air conditioning units and at each return grille during construction. New filters shall be installed in each unit prior to the owner's acceptance of the work.
 - 3. Extra effort shall be maintained to keep the building and the site adjacent to the building clean and under no circumstances shall air systems be operated if finishing and site work operations are creating dust in excess of what would be considered normal if the building were occupied.
 - 4. It shall be understood that any warranty on equipment presented to the owner shall extend from the day of final acceptance by the owner. The cost of warranting the

equipment during operation in the finishing stages of construction shall be borne by the contractor whose system is utilized.

5. The electrical contractor shall have all lamps in proper working condition at the time of final project acceptance.
 - i. The Project Expediter shall provide, if required and where directed, a shed for toilet facilities and shall furnish and install in this shed all water closets required for a complete and adequate sanitary arrangement. These facilities will be available to other contractors on the job and shall be kept in a neat and sanitary condition at all times. Chemical toilets are acceptable.
 - j. The Project Expediter shall, if required by the Supplementary General Conditions and where directed, erect a temporary field office, complete with lights, telephone, heat and air conditioning. A portion of this office shall be partitioned off, of sufficient size, for the use of a resident inspector, should the designer so direct.
 - k. On multi-story construction projects, the Project Expediter shall provide temporary elevators, lifts, or other special equipment for the general use of all contractors. The cost for such elevators, lifts or other special equipment and the operation thereof shall be included in the Project Expediter's bid.
 - l. The Project Expediter will erect one sign on the project if required. The sign shall be of sound construction, and shall be neatly lettered with black letters on white background. The sign shall bear the name of the project, and the names of prime contractors on the project, and the name of the designer and consultants. Directional signs may be erected on the owner's property subject to approval of the owner with respect to size, style and location of such directional signs. Such signs may bear the name of the contractor and a directional symbol. No other signs will be permitted except by permission of the owner.

ARTICLE 41 - CLEANING UP

- a. The contractors shall keep the building and surrounding area reasonably free from rubbish at all times, and shall remove debris from the site on a timely basis or when directed to do so by the designer or Project Expediter. The Project Expediter shall provide an on site refuse container(s) for the use of all contractors. Each contractor shall remove their rubbish and debris from the building on a daily basis. The Project Expediter shall broom clean the building as required to minimize dust and dirt accumulation.
- b. The Project Expediter shall provide and maintain suitable all-weather access to the building.
- c. Before final inspection and acceptance of the building, each contractor shall clean his portion of the work, including glass, hardware, fixtures, masonry, tile and marble (using no acid), clean and wax all floors as specified, and completely prepare the building for use by the owner, with no cleaning required by the owner.

ARTICLE 42 - GUARANTEE

- a. The contractor shall unconditionally guarantee materials and workmanship against patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve (12) months following the date of final acceptance of the work or beneficial occupancy and shall replace such defective materials or workmanship without cost to the owner.

- b. Where items of equipment or material carry a manufacturer's warranty for any period in excess of twelve (12) months, then the manufacturer's warranty shall apply for that particular piece of equipment or material. The contractor shall replace such defective equipment or materials, without cost to the owner, within the manufacturer's warranty period.
- c. Additionally, the owner may bring an action for latent defects caused by the negligence of the contractor which is hidden or not readily apparent to the owner at the time of beneficial occupancy or final acceptance, whichever occurred first, in accordance with applicable law.
- d. Guarantees for roof, equipment, materials, and supplies shall be stipulated in the specifications sections governing such roof, equipment, materials, or supplies.

ARTICLE 43 - CODES AND STANDARDS

Wherever reference is given to codes, standard specifications or other data published by regulating agencies including, but not limited to, national electrical codes, North Carolina state building codes, federal specifications, ASTM specifications, various institute specifications, etc., it shall be understood that such reference is to the latest edition including addenda published prior to the date of the contract documents.

ARTICLE 44 - INDEMNIFICATION

To the fullest extent permitted by law, the contractor shall indemnify and hold harmless the owner, the designer and the agents, consultants and employees of the owner and designer, from and against all claims, damages, losses and expenses, including, but not limited to, attorneys' fees, arising out of or resulting from the performance or failure of performance of the work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting there from, and (2) is caused in whole or in part by any negligent act or omission of the contractor, the contractor's subcontractor, or the agents of either the contractor or the contractor's subcontractor. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this article.

ARTICLE 45 - TAXES

- a. Federal excise taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3442(3)).
- b. Federal transportation taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3475(b) as amended).
- c. North Carolina sales tax and use tax, as required by law, do apply to materials entering into state work and such costs shall be included in the bid proposal and contract sum.
- d. Local option sales and use taxes, as required by law, do apply to materials entering into state work as applicable and such costs shall be included in the bid proposal and contract sum.
- e. **Accounting Procedures for Refund of County Sales & Use Tax**

Amount of county sales and use tax paid per contractor's statements:

Contractors performing contracts for state agencies shall give the state agency for whose project the property was purchased a signed statement containing the information listed in G.S. 105-164.14(e).

The Department of Revenue has agreed that in lieu of obtaining copies of sales receipts from contractors, an agency may obtain a certified statement as of April 1, 1991 from the contractor setting forth the date, the type of property and the cost of the property purchased from each vendor, the county in which the vendor made the sale and the amount of local sales and use taxes paid thereon. If the property was purchased out-of-state, the county in which the property was delivered should be listed. The contractor should also be notified that the certified statement may be subject to audit.

In the event the contractors make several purchases from the same vendor, such certified statement must indicate the invoice numbers, the inclusive dates of the invoices, the total amount of the invoices, the counties, and the county sales and use taxes paid thereon.

Name of taxing county: The position of a sale is the retailer's place of business located within a taxing county where the vendor becomes contractually obligated to make the sale. Therefore, it is important that the county tax be reported for the county of sale rather than the county of use.

When property is purchased from out-of-state vendors and the county tax is charged, the county should be identified where delivery is made when reporting the county tax.

Such statement must also include the cost of any tangible personal property withdrawn from the contractor's warehouse stock and the amount of county sales or use tax paid thereon by the contractor.

Similar certified statements by his subcontractors must be obtained by the general contractor and furnished to the claimant.

Contractors are not to include any tax paid on supplies, tools and equipment which they use to perform their contracts and should include only those building materials, supplies, fixtures and equipment which actually become a part of or annexed to the building or structure.

ARTICLE 46 - EQUAL OPPORTUNITY CLAUSE

The non-discrimination clause contained in Section 202 (Federal) Executive Order 11246, as amended by Executive Order 11375, relative to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin, and the implementing rules and regulations prescribed by the secretary of Labor, are incorporated herein.

ARTICLE 47 - EMPLOYMENT OF INDIVIDUALS WITH DISABILITIES

The contractor(s) agree not to discriminate against any employee or applicant for employment because of physical or mental disabilities in regard to any position for which the employee or applicant is qualified. The contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified individuals with such disabilities without discrimination based upon their physical or mental disability in all employment practices.

ARTICLE 48 - ASBESTOS-CONTAINING MATERIALS (ACM)

The State of North Carolina has attempted to address all asbestos-containing materials that are to be disturbed in the project. However, there may be other asbestos-containing materials in the work areas that are not to be disturbed and do not create an exposure hazard.

Contractors are reminded of the requirements of instructions under Instructions to Bidders and General Conditions of the Contract, titled Examination of Conditions. Statute 130A, Article 19, amended August 3, 1989, established the Asbestos Hazard Management Program that controls asbestos abatement in North Carolina. The latest edition of *Guideline Criteria for Asbestos Abatement* from the State Construction Office is to be incorporated in all asbestos abatement projects for the Capital Improvement Program.

ARTICLE 49 - MINORITY BUSINESS PARTICIPATION

GS 143-128.2 establishes a ten percent (10%) goal for participation by minority businesses in total value of work for each State building project. The document, *Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts* including Affidavits and Appendix E are hereby incorporated into and made a part of this contract.

ARTICLE 50 – CONTRACTOR EVALUATION

The contractor's overall work performance on the project shall be fairly evaluated in accordance with the State Building Commission policy and procedures, for determining qualifications to bid on future State capital improvement projects. In addition to final evaluation, interim evaluation may be prepared during the progress of project. The document, Contractor Evaluation Procedures, is hereby incorporated and made a part of this contract. The owner may request the contractor's comments to evaluate the designer.

ARTICLE 51 – GIFTS

Pursuant to N.C. Gen. Stat. § 133-32, it is unlawful for any vendor or contractor (i.e. architect, bidder, contractor, construction manager, design professional, engineer, subcontractor, supplier, vendor, etc.), to make gifts or to give favors to any State employee. This prohibition covers those vendors and contractors who: (1) have a contract with a governmental agency; or (2) have performed under such a contract within the past year; or (3) anticipate bidding on such a contract in the future. For additional information regarding the specific requirements and exemptions, vendors and contractors are encouraged to review G.S. Sec. 133-32.

During the construction of the Project, the Contractor is prohibited from making gifts to any of the Owner's employees, Owner's project representatives (architect, engineers, construction manager and their employees), employees of the State Construction Office and/or any other State employee that may have any involvement, influence, responsibilities, oversight, management and/or duties that pertain to and/or relate to the contract administration, financial administration and/or disposition of claims arising from and/or relating to the Contract and/or Project.

ARTICLE 52 – AUDITING-ACCESS TO PERSONS AND RECORDS

In accordance with N.C. General Statute 147-64.7, the State Auditor shall have access to Contractor's officers, employees, agents and/or other persons in control of and/or responsible for the Contractor's records that relate to this Contracts for purposes of conducting audits under the referenced statute. The Owner's internal auditors shall also have the right to access and copy the Contractor's records relating to the Contract and Project during the term of the Contract and within two years following the completion of the Project/close-out of the Contract to verify accounts, accuracy, information, calculations and/or data affecting and/or

relating to Contractor's requests for payment, requests for change orders, change orders, claims for extra work, requests for time extensions and related claims for delay/extended general conditions costs, claims for lost productivity, claims for loss efficiency, claims for idle equipment or labor, claims for price/cost escalation, pass-through claims of subcontractors and/or suppliers, and/or any other type of claim for payment or damages from Owner and/or its project representatives.

ARTICLE 53 – NORTH CAROLINA FALSE CLAIMS ACT

The North Carolina False Claims Act ("NCFCA"), N.C Gen. Stat. § 1-605 through 1-618, applies to this Contract. The Contractor should familiarize itself with the entire NCFCA and should seek the assistance of an attorney if it has any questions regarding the NCFCA and its applicability to any requests, demands and/or claims for payment its submits to the State through the contracting state agency, institution, university or community college.

The purpose of the NCFCA "is to deter persons from knowingly causing or assisting in causing the State to pay claims that are false or fraudulent and to provide remedies in the form of treble damages and civil penalties when money is obtained from the State by reason of a false or fraudulent claim." (Section 1-605(b).) A contractor's liability under the NCFCA may arise from, but is not limited to: requests for payment, invoices, billing, claims for extra work, requests for change orders, requests for time extensions, claims for delay damages/extended general conditions costs, claims for lost productivity, claims for loss efficiency, claims for idle equipment or labor, claims for price/cost escalation, pass-through claims of subcontractors and/or suppliers, documentation used to support any of the foregoing requests or claims, and/or any other request for payment from the State through the contracting state agency, institution, university or community college. The parts of the NCFCA that are most likely to be enforced with respect to this type of contract are as follows:

- A "claim" is "[a]ny request or demand, whether under a contract or otherwise, for money or property and whether or not the State has title to the money or property that (i) is presented to an officer, employee, or agent of the State or (ii) is made to a contractor ... if the money or property is to be spent or used on the State's behalf or to advance a State program or interest and if the State government: (a) provides or has provided any portion of the money or property that is requested or demanded; or (b) will reimburse such contractor ... for any portion of the money or property which is requested or demanded." (Section 1-606(2).)
- "Knowing" and "knowingly." – Whenever a person, with respect to information, does any of the following: (a) Has actual knowledge of the information; (b) Acts in deliberate ignorance of the truth or falsity of the information; and/or (c) Acts in reckless disregard of the truth or falsity of the information. (Section 1-606(4).) Proof of specific intent to defraud is not required. (Section 1-606(4).)
- "Material" means having a natural tendency to influence, or be capable of influencing, the payment or receipt of money or property. (Section 1-606(4).)
- Liability. – "Any person who commits any of the following acts shall be liable to the State for three times the amount of damages that the State sustains because of the act of that person[:]" ... (1) Knowingly presents or causes to be presented a false or fraudulent claim for payment or approval. (2) Knowingly makes, uses, or causes to be made or used, a false record or statement material to a false or fraudulent claim. (3) Conspires to commit a violation of subdivision (1), (2) ..." (Section 1-607(a)(1), (2).)

- The NCFCA shall be interpreted and construed so as to be consistent with the federal False Claims Act, 31 U.S.C. § 3729, et seq., and any subsequent amendments to that act. (Section 1-616(c).)

Finally, the contracting state agency, institution, university or community college may refer any suspected violation of the NCFCA by the Contractor to the Attorney General's Office for investigation. Under Section 1-608(a), the Attorney General is responsible for investigating any violation of NCFCA, and may bring a civil action against the Contractor under the NCFCA. The Attorney General's investigation and any civil action relating thereto are independent and not subject to any dispute resolution provision set forth in this Contract. (See Section 1-608(a).)

ARTICLE 54 – TERMINATION FOR CONVENIENCE

Owner may at any time and for any reason terminate Contractor's services and work at Owner's convenience. Upon receipt of such notice, Contractor shall, unless the notice directs otherwise, immediately discontinue the work and placing of orders for materials, facilities and supplies in connection with the performance of this Agreement.

Upon such termination, Contractor shall be entitled to payment only as follows: (1) the actual cost of the work completed in conformity with this Agreement; plus, (2) such other costs actually incurred by Contractor as are permitted by the prime contract and approved by Owner; (3) plus ten percent (10%) of the cost of the work referred to in subparagraph (1) above for overhead and profit. There shall be deducted from such sums as provided in this subparagraph the amount of any payments made to Contractor prior to the date of the termination of this Agreement. Contractor shall not be entitled to any claim or claim of lien against Owner for any additional compensation or damages in the event of such termination and payment.

SUPPLEMENTAL GENERAL CONDITIONS

These Supplementary Conditions modify the current 24th edition (Revised January 2013) of Form OC-15, General Conditions of the Contract included in these documents).

ARTICLE 1 – DEFINITIONS

Modify paragraph 'i' to add "This is a single prime contract. The general contractor shall be designated as the Project Expeditor, and as such, is responsible for all responsibilities and duties noted herein for the Project Expeditor".

ARTICLE 14 – CONSTRUCTION SUPERVISION AND SCHEDULE

Modify paragraph 'g' and 'j' as follows:

If the construction contract is over \$500,000, remove all languages pertaining to Bar Chart Schedule.

If the construction contract is under \$500,000.00 remove all languages pertaining to the CPM Schedule

FORM OF CONSTRUCTION CONTRACT

(ALL PRIME CONTRACTS)

THIS AGREEMENT, made the _____ day of _____ in the year of 20__ by and between _____

hereinafter called the Party of the First Part and the *State of North Carolina, through the Department of Natural and Cultural Resources - North Carolina Zoological Park hereinafter called the Party of the Second Part.

WITNESSETH:

That the Party of the First Part and the Party of the Second Part for the consideration herein named agree as follows:

1. Scope of Work: The Party of the First Part shall furnish and deliver all of the materials, and perform all of the work in the manner and form as provided by the following enumerated plans, specifications and documents, which are attached hereto and made a part thereof as if fully contained herein: advertisement; Instructions to Bidders; General Conditions; Supplementary General Conditions; specifications; accepted proposal; contract; performance bond; payment bond; power of attorney; workmen's compensation; public liability; property damage and builder's risk insurance certificates; approval of attorney general; certificate by the Office of State Budget and Management, and drawings, titled:

Roof Replacements for North American Buildings
North Carolina Zoo

Consisting of the following sheets:

Dated: _____ and the following addenda:

Addendum No	_____	Dated:	_____	Addendum No.	_____	Dated:	_____
Addendum No	_____	Dated:	_____	Addendum No.	_____	Dated:	_____
Addendum No	_____	Dated:	_____	Addendum No.	_____	Dated:	_____
Addendum No	_____	Dated:	_____	Addendum No.	_____	Dated:	_____

2. That the Party of the First Part shall commence work to be performed under this agreement on a date to be specified in a written order of the Party of the Second Part and shall fully complete all work hereunder within _____ consecutive calendar days

from said date. For each day in excess thereof, liquidated damages shall be as stated in Supplementary General Conditions. The Party of the First Part, as one of the considerations for the awarding of this contract, shall furnish to the Party of the Second Part a construction schedule setting forth planned progress of the project broken down by the various divisions or part of the work and by calendar days as outlined in Article 14 of the General Conditions of the Contract.

3. The Party of the Second Part hereby agrees to pay to the Party of the First Part for the faithful performance of this agreement, subject to additions and deductions as provided in the specifications or proposal, in lawful money of the United States as follows:

(\$ _____).

Summary of Contract Award:

4. In accordance with Article 31 and Article 32 of the General Conditions of the Contract, the Party of the Second Part shall review, and if approved, process the Party of the First Party's pay request within 30 days upon receipt from the Designer. The Party of the Second Part, after reviewing and approving said pay request, shall make payments to the Party of the First Part on the basis of a duly certified and approved estimate of work performed during the preceding calendar month by the First Party, less five percent (5%) of the amount of such estimate which is to be retained by the Second Party until all work has been performed strictly in accordance with this agreement and until such work has been accepted by the Second Party. The Second Party may elect to waive retainage requirements after 50 percent of the work has been satisfactorily completed on schedule as referred to in Article 31 of the General Conditions.

5. Upon submission by the First Party of evidence satisfactory to the Second Party that all payrolls, material bills and other costs incurred by the First Party in connection with the construction of the work have been paid in full, final payment on account of this agreement shall be made within thirty (30) days after the completion by the First Party of all work covered by this agreement and the acceptance of such work by the Second Party.

6. It is further mutually agreed between the parties hereto that if at any time after the execution of this agreement and the surety bonds hereto attached for its faithful performance, the Second Party shall deem the surety or sureties upon such bonds to be unsatisfactory, or if, for any reason, such bonds cease to be adequate to cover the performance of the work, the First Party shall, at its expense, within five (5) days after the receipt of notice from the Second Party so to do, furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the Second Party. In such event no further payment to the First Party shall be deemed to be due under this agreement until such new or additional security for the faithful performance of the work shall be furnished in manner and form satisfactory to the Second Party.

7. The Party of the First Part attest that it and all of its subcontractors have fully complied with all requirements of NCGS 64 Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

IN WITNESS WHEREOF, the Parties hereto have executed this agreement on the day and date first above written in _____ counterparts, each of which shall without proof or accounting for other counterparts, be deemed an original contract.

Witness:

Contractor: (Trade or Corporate Name)

(Proprietorship or Partnership)

By: _____

Title: _____
(Owner, Partner, or Corp. Pres. or Vice Pres. only)

Attest: (Corporation)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

The State of North Carolina through*

(CORPORATE SEAL)

(Agency, Department or Institution)

Witness:

By: _____

Title: _____

FORM OF PERFORMANCE BOND

Date of Contract: _____

Date of Execution: _____

Name of Principal
(Contractor) _____

Name of Surety: _____

Name of Contracting
Body: _____

Amount of Bond: _____

Project _____

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind, ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body, identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the contracting body, with or without notice to the surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in _____ counterparts.

Witness:

(Proprietorship or Partnership)

Attest: (Corporation)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

(Corporate Seal)

Witness:

Countersigned:

(N.C. Licensed Resident Agent)

Name and Address-Surety Agency

Surety Company Name and N.C.
Regional or Branch Office Address

Contractor: (Trade or Corporate Name)

By: _____

Title: _____
(Owner, Partner, or Corp. Pres. or Vice
Pres. only)

(Surety Company)

By: _____

Title: _____
(Attorney in Fact)

(Surety Corporate Seal)

FORM OF PAYMENT BOND

Date of Contract: _____

Date of Execution: _____

Name of Principal
(Contractor) _____

Name of Surety: _____

Name of Contracting
Body: _____

Amount of Bond: _____

Project _____

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall promptly make payment to all persons supplying labor/material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in _____ counterparts.

Witness:

(Proprietorship or Partnership)

Attest: (Corporation)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec.. only)

(Corporate Seal)

Witness:

Countersigned:

(N.C. Licensed Resident Agent)

Name and Address-Surety Agency

Surety Company Name and N.C.
Regional or Branch Office Address

Contractor: (Trade or Corporate Name)

By: _____

Title _____
(Owner, Partner, or Corp. Pres. or Vice
Pres. only)

(Surety Company)

By: _____

Title: _____
(Attorney in Fact)

(Surety Corporate Seal)

Sheet for Attaching Power of Attorney

Sheet for Attaching Insurance Certificates

APPROVAL OF THE ATTORNEY GENERAL

**CERTIFICATION BY THE OFFICE OF STATE
BUDGET AND MANAGEMENT**

Provision for the payment of money to fall due and payable by the

under this agreement has been provided for by allocation made and is available for the purpose of carrying out this agreement.

This _____ day of _____ 20____.

Signed _____
Budget Officer

FORM OF PROPOSAL

Roof Replacemnts for North American Buildings

NC Zoological Park – North Carolina Department of Natural & Cultural Resources

SCO # 19-20040-01A; Code 41814; Item 4E05A

Contract: _____

Bidder: _____

Date: _____

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The bidder further declares that he has examined the site of the work and the contract documents relative thereto and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed. The bidder further declares that he and his subcontractors have fully complied with NCGS 64, Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

The Bidder proposes and agrees if this proposal is accepted to contract with the

State of North Carolina through the NC Zoological Park, Department of Natural & Cultural Resources

in the form of contract specified below, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of

Complete roof replacement, window and skylight replacement, and rain-screen wall replacement for the North American Buildings identified on the Construction Documents at the NC Zoological Park. The existing cedar shake roofing shingles, felt underlayment, flashing, and fascia shall be demolished, disposed of, and replaced with a new standing-seam metal roofing system, flashing, accessories, and fascia.

in full in complete accordance with the plans, specifications and contract documents, to the full and entire satisfaction of the NC Zoological Park, and the

North Carolina Department of Natural & Cultural Resources

and

Engineered Concepts I Terracon Consultants, Inc.

with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and the contract documents, for the sum of:

SINGLE PRIME CONTRACT:

Base Bid: _____

Dollars(\$)_____

General Subcontractor:

_____ Lic _____

Plumbing Subcontractor:

_____ Lic _____

Mechanical Subcontractor:

_____ Lic _____

Electrical Subcontractor:

_____ Lic _____

GS143-128(d) requires all single prime bidders to identify their subcontractors for the above subdivisions of work. A contractor whose bid is accepted shall not substitute any person as subcontractor in the place of the subcontractor listed in the original bid, except (i) if the listed subcontractor's bid is later determined by the contractor to be non-responsible or non-responsive or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work, or (ii) with the approval of the awarding authority for good cause shown by the contractor.

ALTERNATES:

Should any of the alternates as described in the contract documents be accepted, the amount written below shall be the amount to be "added to" the base bid.

GENERAL CONTRACT:

Alternate No. G-1 (*Building #2- Cart Storage. Roof Area 2,020 SQ-FT*)

(Add) _____ Dollars(\$)

Alternate No. G-2 (*Building #3 – Tram Office. Roof Area 1,500 SQ-FT with one (1) pipe vent*)

(Add) _____ Dollars(\$)

Alternate No. G-3 (*Exhaust Grease Fan Service Platforms and Stairs*)

(Add) _____ Dollars(\$)

Alternate No. G-4 (*Exhaust Grease Fan Curb Replacement*)

(Add) _____ Dollars (\$)

Alternate No. G-5 (*Relocate Exhaust Fan Hinges (6) Total*)

(Add) _____ Dollars (\$)

UNIT PRICES

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work all in accordance with the contract documents.

GENERAL CONTRACT:

No. 1 Cementitious Roof Panel Replacement (Non-Insulated)

(Per 4' x 8' Panel)

Unit Price (\$)_____

No. 2 Cementitious Roof Panel Replacement (Insulated)

(Per 4' x 8' Panel)

Unit Price (\$)_____

No. 3 Relocate Plumbing Vent to Penetrate Between Standing Seam Ribs. Maximum Size 3-inch Diameter Pipe

(Per Vent Relocation)

Unit Price (\$)_____

No. 4 Replace T1-11 Soffit and Finish to Match Existing

(Square Foot)

Unit Price (\$)_____

No. 5 Replace Damaged Wood Block at Truss Ends

(2x10 SYP #2 – Linear Foot)

Unit Price (\$)_____

(2x6 SYP #2 – Linear Foot)

Unit Price (\$)_____

No. 6 Relocate Service Hinge @ Kitchen Exhaust Fans

(Per Hinge)

Unit Price (\$)_____

The bidder further proposes and agrees hereby to commence work under this contract on a date to be specified in a written order of the designer and shall fully complete all work thereunder within the time specified in the Supplementary General Conditions Article 23. Applicable liquidated damages amount is also stated in the Supplementary General Conditions Article 23.

MINORITY BUSINESS PARTICIPATION REQUIREMENTS

Provide with the bid - Under GS 143-128.2(c) the undersigned bidder shall identify **on its bid** (Identification of Minority Business Participation Form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. **Also** list the good faith efforts (Affidavit **A**) made to solicit minority participation in the bid effort.

NOTE: A contractor that performs all of the work with its own workforce may submit an Affidavit (**B**) to that effect in lieu of Affidavit (**A**) required above. The MB Participation Form must still be submitted even if there is zero participation.

After the bid opening - The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low bidder, the bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

An Affidavit (**C**) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the 10% goal established. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort and Affidavit **D** is not necessary;

*** OR ***

If less than the 10% goal, Affidavit (**D**) of its good faith effort to meet the goal shall be provided. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

Note: Bidders must always submit **with their bid** the Identification of Minority Business Participation Form listing all MB contractors, vendors and suppliers that will be used. If there is no MB participation, then enter none or zero on the form. Affidavit A **or** Affidavit B, as applicable, also must be submitted with the bid. Failure to file a required affidavit or documentation with the bid or after being notified apparent low bidder is grounds for rejection of the bid.

Proposal Signature Page

The undersigned further agrees that in the case of failure on his part to execute the said contract and the bonds within ten (10) consecutive calendar days after being given written notice of the award of contract, the certified check, cash or bid bond accompanying this bid shall be paid into the funds of the owner's account set aside for the project, as liquidated damages for such failure; otherwise the certified check, cash or bid bond accompanying this proposal shall be returned to the undersigned.

Respectfully submitted this day of _____

(Name of firm or corporation making bid)

WITNESS:

(Proprietorship or Partnership)

By: _____
Signature

Name: _____
Print or type

Title _____
(Owner/Partner/Pres./V.Pres)

Address _____

ATTEST:

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

License No. _____

Federal I.D. No. _____

Email Address: _____

(CORPORATE SEAL)

Addendum received and used in computing bid:

Addendum No. 1 _____ Addendum No. 3 _____ Addendum No. 5 _____ Addendum No. 6 _____

Addendum No. 2 _____ Addendum No. 4 _____ Addendum No. 6 _____ Addendum No. 7 _____

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS THAT _____

_____ as principal, and _____, as surety, who is duly licensed to act as surety in North Carolina, are held and firmly bound unto the State of North Carolina* through _____ as obligee, in the penal sum of _____ DOLLARS, lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Signed, sealed and dated this ____ day of ____ 20__

WHEREAS, the said principal is herewith submitting proposal for
and the principal desires to file this bid bond in lieu of making
the cash deposit as required by G.S. 143-129.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such, that if the principal shall be awarded the contract for which the bid is submitted and shall execute the contract and give bond for the faithful performance thereof within ten days after the award of same to the principal, then this obligation shall be null and void; but if the principal fails to so execute such contract and give performance bond as required by G.S. 143-129, the surety shall, upon demand, forthwith pay to the obligee the amount set forth in the first paragraph hereof. Provided further, that the bid may be withdrawn as provided by G.S. 143-129.1

_____(SEAL)

_____(SEAL)

_____(SEAL)

_____(SEAL)

_____(SEAL)

State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of _____

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- ☐ **1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- ☐ **2 – (10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- ☐ **3 – (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- ☐ **4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- ☐ **5 – (10 pts)** Attended prebid meetings scheduled by the public owner.
- ☐ **6 – (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- ☐ **7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- ☐ **8 – (25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- ☐ **9 – (20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- ☐ **10 – (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

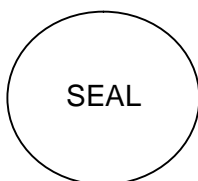
The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

**State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract
with Own Workforce.**

County of _____

Affidavit of _____

(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____

_____ contract.

(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by HUB Certified/Minority Businesses

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by HUB certified/minority businesses as defined in GS143-128.2(g) and 128.4(a),(b),(e) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit.

This affidavit shall be provided by the apparent lowest responsible, responsive bidder within **72 hours** after notification of being low bidder.

Affidavit of _____ I do hereby certify that on the
(Name of Bidder)

(Project Name)
Project ID# _____ Amount of Bid \$ _____

I will expend a minimum of _____ % of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. Attach additional sheets if required

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

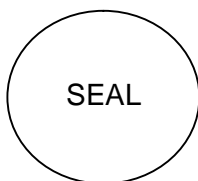
*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____



Signature: _____

Title: _____

State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

State of North Carolina AFFIDAVIT D – Good Faith Efforts

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by HUB Certified/ minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of _____ I do hereby certify that on the _____
(Name of Bidder)

Project ID# _____ (Project Name) Amount of Bid \$ _____

I will expend a minimum of _____% of the total dollar amount of the contract with HUB certified/ minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. (Attach additional sheets if required)

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Examples of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

- Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- Copies of quotes or responses received from each firm responding to the solicitation.
- A telephone log of follow-up calls to each firm sent a solicitation.
- For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
- Copy of pre-bid roster
- Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
- Letter detailing reasons for rejection of minority business due to lack of qualification.
- Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

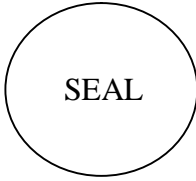
Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

SECTION 01010

SUMMARY OF THE WORK

PART 1: GENERAL

1.01 LOCATION OF THE PROJECT:

The site of this project is at the N.C. Zoological Park, located at 4401 Zoo Parkway in Asheboro, North Carolina.

1.02 SCOPE OF WORK:

The work described in the Contract Documents includes the furnishing of all labor, materials, equipment and services necessary for the complete Roof Replacement, Window and Skylight Replacement, and Rain-Screen Wall Replacement of the North American Buildings identified herein and in the Construction Documents.

A. Base Bid: The base bid for work in this contract shall include all of the work outlined in the contract documents unless specifically identified as an Alternate (Alt.) and including the following:

1. Building 1 N. American Entrance: Roof, Skylight, Window, & Vertical Rain-Screen Wall Replacement.
2. Building 4 Wind Burger Café: Roof Replacement
3. Building 5 Prairie Popcorn: Roof Replacement
4. Building 6 Prairie Restrooms: Roof Replacement
5. Building 7 Junction Springs Café: Roof Replacement
6. Building 8 Kids' Junction Gifts: Roof Replacement
7. Building 9 Junction Pizza Café: Roof Replacement

B. Add Alternates

1. Alt. #1 Building 2 Cart Storage: Roof Replacement
2. Alt. #2 Building 3 Tram Office: Roof Replacement
3. Alt. #3 Buildings 1, 4, 7, & 9: Install Five (5) Kitchen Exhaust Service Platforms and Stairs
4. Alt. #4 Buildings 1, 4, 7, & 9: Replace seven (7) Curbs at Kitchen Exhaust Fans
5. Alt. #5 Buildings 1, 4, 7, & 9: Relocation of Hinges on (5) Exhaust Fans

C. Permits:

The Contractor shall obtain and pay for all necessary permits for the work described in the Contract Documents.

D. Contractor's Use of Premises:

During the construction period, this facility will remain open. The Contractor shall coordinate access to the premises with the facility staff. Work hours shall not be limited, except on occasions of special events. Hours of work and Special Events will be discussed in detail at the Pre-Bid Conference and will be issued in a follow-up addendum.

Other than for the purpose of conducting repairs that require interior access, the Contractor shall not access the interior of buildings. Access to the building interior to perform repairs shall be coordination with the Owner's representative.

1.03 COORDINATION ISSUES:

The General Contractor shall coordinate with the Project Engineer and the facility staff his schedule of work and shall plan his work to allow timely inspection of the work as it progresses.

The Contractor shall coordinate with the facility staff his schedule of work, exits and entrances, access drives, and any other areas that are required to be temporarily closed. The Contractor shall maintain open at all times any exits that serve as required fire exits. Properly protect passage through required exits that must remain open.

1.04 PROTECTION:

Protection shall consist (in general) of the following:

A. Streets, Walks, and Landscaping:

Contractor shall protect all streets and walks and shall make all necessary repairs at his own expense. All shrubs, trees, plantings, and lawns shall be protected at all times. Contractor shall repair, replace, or re-seed all damaged areas equivalent in all respects to the existing to the satisfaction of the Engineer and the facility staff.

B. Roads, Entrances, and Walks:

Contractor shall protect roads, parking areas, entrances, and walks. He shall maintain them during course of work and shall repair all damages to same at this own expense. At the main entrances to the Visitors Center building, the Contractor shall construct temporary structures to provide overhead protection during the work.

C. Buildings:

The Contractor shall protect all existing buildings and equipment and shall repair all damages to same at his own expense.

1.05 TEMPORARY UTILITIES:

A. The General Contractor shall make the necessary arrangements to use water as provided by the Owner.

B. The General Contractor shall make the necessary arrangements to use temporary power as required other than power sources provided by the facility using the facility's existing available power. Any power source required by the General Contractor that is not available shall be provided by the General Contractor at his own expense.

C. The General Contractor shall furnish temporary toilet facilities for the use of his personnel for the duration of the project. Use of toilets inside the building by workmen is prohibited.

1.06 CONTRACTOR SUPERVISOR:

The General Contractor shall assign and maintain a single person as a job superintendent on this project. The superintendent shall not be responsible for other duties or projects other than the duties required to complete the scope of work required for the complete structural rehabilitation of this facility. The superintendent shall have a minimum of ten (10) years of verifiable experience on similar projects.

1.07 SAFETY:

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. The Contractor shall comply with all safety and other applicable requirements in regard to all phases of this project including, but not limited to, all applicable regulations of the North Carolina Department of Labor, OSHA, EPA, and the Owner. The Contractor shall handle all products with appropriate precautions and care as stated on the Material Safety Data Sheets (MSDS) for each product. All personnel engaged in the work shall be required to properly wear personal safety equipment at all times.

1.08 GUARD LIGHTS:

Contractor shall provide and maintain guard lights at all barricades, obstructions, roads, or sidewalks, and at all entrances and exits where his work affects the use of these areas.

1.09 TEMPORARY SHORING:

The General Contractor shall be responsible for providing and installing any temporary shoring and bracing required during the construction.

1.10 TEMPORARY PROTECTION:

The General Contractor shall be responsible for providing and installing any measures to provide temporary protection of the building and premises. See paragraph 1.04.B for additional information regarding temporary structures.

1.11 TESTING:

The Owner will reserve the right to employ an independent testing laboratory for testing required by these Specifications. The General Contractor shall provide timely notification to the Testing Laboratory in advance for performing work requiring specific testing.

SECTION 01012

SUBMITTALS

PART 1: GENERAL

1.01 SCHEDULE OF SUBMITTALS:

Contractor shall prepare and submit to Project Engineer a schedule of submittals as required in the Contract Documents. Schedule shall fix dates for submission, and the lead-time for each submittal as related to requirement for return-receipt of submittal to expedite delivery of material to maintain progress schedule.

It is to be understood that this schedule will be subject to change from time to time in accordance with the progress of the work.

No work shall be performed on work involving submittals until approval has been received.

The Contractor shall allow a minimum of fourteen (14) calendar days for the review of submittals or shop drawings after submitting them to the Project Engineer.

1.02 SUBMITTALS:

Non-reproducible submittals for approval shall be in the form of 4 copies, unless required specifically otherwise elsewhere in the Contract Documents. In lieu of paper copies, submittals may be made electronically.

All submittals shall be reviewed by the Contractor and bear the Contractor's stamp prior to submittal to Project Engineer for review.

Submit shop drawings, product data, and samples in accordance with the requirements of Section 01340 of these Specifications.

1.03 SCHEDULE OF VALUES AND COST BREAKDOWN:

Submit a schedule of values on AIA Document G703, 2007 or a later version. The schedule of values shall be itemized in sufficient detail such that the Project Engineer can fairly evaluate the subsequent pay requests submitted by the Contractor. The schedule of values shall be broken down for labor and materials for each item.

1.04 CONSTRUCTION SCHEDULE:

Prior to beginning work, the Contractor shall furnish to the Project Engineer a construction schedule. This schedule shall include all major tasks to be done and a logic sequence or diagram of how the tasks will be done. The times given shall be in calendar days. The construction schedule shall be arranged such that the actual progress made on the project can be compared directly to the planned progress shown on the schedule. The actual progress shall be updated monthly and copies of the updated schedule furnished to the University and the Project Engineer.

1.05 REQUESTS FOR PAYMENT:

Requests for Payment by the Contractor shall consist of four (4) originals and shall match the tasks listed on the Schedule furnished by the Contractor as listed in 1.04 above. The dollar amount for each task shall be listed. The Request for Payment shall be done on AIA Form G702 - 1992. Earlier versions of this form will not be acceptable. Computer simulated versions of this form may be accepted if submitted for approval.

Each request for payment shall be accompanied by the following:

- A. Contractor's Affidavit certifying that all costs of materials, equipment, labor, and all else entering into the accomplishment of this contract, including payrolls, have been paid in full.
- B. A Revised Project Schedule for completion of the project. The revised schedule shall indicate the progress made to date relative to the original construction schedule as well as the proposed schedule for completion of the project. The revised schedule must be certified and signed by the Contractor.
- C. No request for payment will be processed unless it is accompanied by the Contractor's Affidavit and the Revised Project Schedule.

SECTION 01013

RECORD DOCUMENTS

PART 1: GENERAL

1.01 AS-BUILT DRAWINGS:

The Contractor shall, upon completion of the work, furnish to the Engineer a marked set of prints of the drawings showing the work as actually performed and as located on the site. As-built conditions shall be kept daily by the Contractor on a set of Contract Documents kept at the project site.

The Engineer will prepare "Record Documents" for submittal to the Owner based on information shown on the contractor's as-built submittal.

1.02 DOCUMENTS AT THE PROJECT SITE:

Contractor shall maintain at the project site on complete set of drawings and specifications for his work. The drawings and specifications shall be maintained in good order and readable condition. The drawings and specifications shall be marked in red to show changes in the work required by change orders and shall show as-built changes.

All of the documents required at the project site under this article shall be available for use by the Project Engineer or his representative at all times.

Upon completion of the project, the documents required under this article shall be turned over to the Project Engineer.

SECTION 01200

PRICE AND PAYMENT PROCEDURES

PART 1: GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.

1.02 SCHEDULE OF VALUES

- A. Electronic media printout including equivalent information will be considered (if approved by Owner) in lieu of standard form specified; submit draft to Architect for approval.
- B. Forms filled out by hand will not be accepted.

1.03 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered (if approved by Owner) in lieu of standard form specified; submit sample to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Execute certification by signature of authorized officer.
- E. Submit three copies of each Application for Payment.

1.04 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01 7000.

END OF SECTION

SECTION 01220

UNIT PRICES

PART 1: GENERAL

1.01 SECTION INCLUDES

- A. List of unit prices, for use in preparing Bids.
- B. Measurement and payment criteria applicable to Work performed under a unit price payment method.

1.02 RELATED REQUIREMENTS

- A. Division 0 - Form of Proposal for providing Unit Prices in Bid

1.03 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.
- B. Unit Prices are to cover unforeseen site or building conditions, or Owner requested adds or deducts from the Base Scope of Work, after bids are received.
- C. Base Bid costs is to include costs for all Base Bid Scope of Work in the contract documents.

1.04 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.05 MEASUREMENT OF QUANTITIES

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section.
- B. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect, Engineers, and Owner
- C. Assist by providing necessary equipment, workers, and survey personnel as required.
- D. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness. Measurement based on compacted volume, not loose volume on site, or on truck E. Measurement by Area: Measured by square dimension using mean length and width or radius.
- F. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- G. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Architect prior to starting work.

1.06 PAYMENT

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.
- B. Payment will not be made for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from the transporting vehicle.
 - 4. Products placed beyond the lines and levels of the required Work.

5. Products remaining on hand after completion of the Work.
6. Loading, hauling, and disposing of rejected Products.

1.07 DEFECT ASSESSMENT

- A. Replace Work, or portions of the Work, not complying with specified requirements.

1.08 SCHEDULE OF UNIT PRICES

- A. See below for list of Unit Price Descriptions.
- B. See Form of Proposal for additional List of Unit Price Items and Descriptions
- C. Base Bid quantities for repairs are provided on drawing sheet R9.

Unit Price No. 1: Provide removal and replacement of existing damaged non-insulated Cementitious Roof Panel to match existing roof panels where authorized or directed. Work to be performed as outlined in the documents under the designated "Repair Type". Unit of measure shall be per 4'x8' panel

Unit Price No.2: Provide removal and replacement of existing damaged insulated Cementitious Roof Panel to match existing roof panels where authorized or directed. Work to be performed as outlined in the documents under the designated "Repair Type". Unit of measure shall be per 4'x8' panel

Unit Price No. 3: Relocate existing plumbing vent penetration through roof between new standing seam roof panels where authorized or directed. Work to be performed as outlined in the documents under the designated "Repair Type". Maximum size 3-inch diameter pipe. Unit of measure shall be per vent relocations.

Unit Price No. 4: Remove, replace, and refinish (to match existing) deteriorated sections of R1-11 soffit panels where authorized or directed. Work to be performed as outlined in the documents under the designated "Repair Type" Unit of measure shall be per square foot.

Unit Price No. 5: Remove and replace deteriorated wood blocking at truss ends where authorized or directed. Replacement block shall be 2x10 SYP#2 and 2x6 SYP #2 too match existing conditions. Unit of measure shall be per linear foot

Unit Price No. 6: Relocate existing hinges at roof mounted exhaust fans where authorized or directed. This includes providing chain limiter for operation. Work shall be performed as outlined in the documents under the designated "Repair Type". Unit of measure shall be per kitchen exhaust fan.

END OF SECTION

SECTION 01230

ALTERNATES

PART 1: GENERAL

1.01 SECTION INCLUDES

- A. Description of Alternates.
- B. Procedures for pricing Alternates.
- C. Documentation of changes to Contract Price and Contract Time.

1.02 ACCEPTANCE OF ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.03 SCHEDULE OF ALTERNATES

- A. Alternate No. G-1 - Roof Replacement of Building #2 Cart Storage. Roof Area 2,020 Sq. Ft. See drawings for the full scope of work.
- B. Alternate No. G-2 - Roof Replacement of Building #3 Tram Office. Roof Area 1,500 Sq. Ft and includes one vent pipe relocation. See drawings for the full scope of work.
- C. Alternate No. G-3 - Install new service platforms, access stairs, handrails, and guardrails of various sizes and arrangements at existing exhaust fans. This work includes below-roof structural improvements to support new stairs and platforms. Refer to drawings for the full scope of work.
- D. Alternate No. G-4 - Remove and replace six (7) existing exhaust grease fan curbs. Refer to the drawings for the full scope of work.
- E. Alternate No. G-5 - Relocate exhaust fan hinges on 6 existing exhaust fans. This work includes providing new electrical wiring to accommodate the relocation of hinges. Refer to the drawings for the full scope of work.

END OF SECTION

SECTION 01340

PRODUCT DATA AND SAMPLES

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED:

Contractor shall submit to Project Engineer for review and approval with such promptness as to cause no delay in work, all samples and shop drawings required by the Contract Documents. All samples and shop drawings will have been checked by and accompanied by a specific written indication that contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, supplier, pertinent data such as catalog numbers and the use for which intended.

1.02 PRODUCT DATA:

Submit only pages that are pertinent. Mark each copy of standard printed data to identify pertinent products, referenced to specification section and article number. Show reference standards and performance characteristics. Provide manufacturer's printed preparation, assembly, and installation instruction as specified.

Submit product samples as required in other sections of these Specifications. Product samples for the paint, pre-finished metals, and column wraps shall be submitted for color selection by the Owner. Submit a minimum of two representative samples of each product.

1.03 CONTRACTOR REVIEW:

Before submission of each shop drawing or sample, Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto, and reviewed or coordinated each shop drawing or sample with other shop drawings and samples and with the requirements of the work and the Contract Documents.

At the time of each submission, Contractor shall give Project Engineer specific written notice of each variation that the shop drawings or samples may have from the requirements of the Contract Documents, and in addition, shall cause a specific notation to be made on each shop drawing submitted to Project Engineer for review and approval of each such variation.

Where a shop drawing or sample is required by the specifications, any related work performed prior to Project Engineer's review and approval of the pertinent submission will be the sole expense and responsibility of Contractor.

1.04 PROJECT ENGINEER'S REVIEW:

Project Engineer will review and approve, in accordance with the approved Schedule of Submittals, shop drawings and samples, but Project Engineer's review and approval will be only for conformance with the design concept of the project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item

functions. Contractor shall make corrections required by Project Engineer, and shall return the required number of corrected copies of shop drawings and submit as required new samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Project Engineer on previous submittals.

Project Engineer's review and approval of shop drawings or samples shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents, unless Contractor has in writing called Project Engineer's attention to each such variation at the time of submission as required by Paragraph 1.03, and Engineer has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the shop drawing or sample approval; nor will any approval by Project Engineer relieve Contractor from responsibility for errors or omissions in the shop drawings or from responsibility for having complied with the provisions of Paragraph 1.03.

1.05 SUBMITTAL REQUIREMENTS:

Transmit submittals in accordance with approved submittal schedule and in such sequence to avoid delay in the work or work of other contracts.

Apply Contractor's stamp, signed or initialed, certifying to review, verification of products, field dimensions and field construction criteria, and coordination of information with requirements of work and Contract Documents.

A. Number of Submittals Required:

Product Data: Submit the number of copies that the Contractor requires, plus three (3) additional copies to the Project Engineer.

SECTION 01400

QUALITY REQUIREMENTS

PART 1: GENERAL

1.01 SECTION INCLUDES

- A. Quality assurance.
- B. References and standards.
- C. Testing and inspection agencies and services.
- D. Control of installation.
- E. Mock-ups.
- F. Manufacturers' field services.
- G. Defect Assessment.
- H. Clean up

1.02 RELATED REQUIREMENTS

- A. Division 0 - Instructions to Bidders and General Conditions: Article 1, Article 5, Article 10, and Article 13
- B. Section 01012 - Submittals
- C. Section 01340 - Product Data and Samples.

1.03 REFERENCE STANDARDS

Whenever reference is made to Codes, standard specifications, or other data published by regulating agencies or accepted organizations, it shall be understood that such reference is made to the latest edition (including addenda) published prior to the date of the Contract Documents, except as noted specifically otherwise by date in the Contract Documents.

Among those frequently used in the Contract Documents are the following (with the respective abbreviations used):

- | | | |
|----|---|--------|
| 1. | American Society for Testing and Materials | (ASTM) |
| 2. | American Society of Civil Engineers | (ASCE) |
| 3. | American Iron & Steel Institute | (AISI) |
| 4. | North Carolina Building Code (2012 Edition) | (Code) |
| 5. | American Institute of Steel Construction | (AISC) |
| 6. | American Welding Society | (AWS) |

1.04 QUALITY ASSURANCE

A. Testing Agency Qualifications:

- 1. Prior to start of Work, submit agency name, address, and telephone number, and names of full-time registered Engineer and responsible officer.

- 2. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.

1.05 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.06 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Owner will employ and pay for services of an independent testing agency to perform other specified testing.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 3: EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the

manufacturer.

- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UP

- A. Before installing portions of the Work where mock-ups are required, construct mock-ups in
- B. location and size indicated for each form of construction and finish required to comply with the
- C. following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.
- D. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.
- E. Notify Architect, Owner, fifteen (15) working days in advance of dates and times when mock-ups will be constructed.
- F. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.
- G. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
- H. Assemble and erect specified items with specified attachment and anchorage devices,
- I. flashings, seals, and finishes.
- J. Accepted mock-ups shall be a comparison standard for the remaining Work.
- K. Where mock-up has been accepted by Architect and is specified in product specification
- L. sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

3.03 TESTING AND INSPECTION

- A. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
 - 5. Perform additional tests and inspections required by Architect.
 - 6. Submit reports of all tests/inspections specified.
- B. Limits on Testing/Inspection Agency Authority:

1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency may not approve or accept any portion of the Work.
 3. Agency may not assume any duties of Contractor.
 4. Agency has no authority to stop the Work.
- C. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- D. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.
- E. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.04 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.05 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.

3.06 CLEANING UP

- A. Removal Of Debris:

All debris and waste materials shall become the property of the Contractor and shall be removed from the project site as it accumulates. The Contractor is required to properly dispose of all debris in

accordance with all local, state, and federal regulations that may apply. The contractor is not permitted to use dumpster and waste containers that are leased and used by the Owner.

B. Owner Claim to Demolished Material:

All existing stone roof ballast shall be retained for the owners use. This material shall be removed and disposed of at an on-site location as agreed upon by the owner and contractor.

C. Mud and Dust from Movement Of Vehicles:

The Contractor shall not allow debris, mud, and dust to accumulate for more than one day before removing such. At no time shall any accumulation be allowed which will create a hazard to safety, or which will create bad public relations.

The measures to be used to prevent littering the pavement shall include (but does not constitute the only measure to be used, if necessary) the following:

1. Maintain dust control.
2. Pick up debris as it occurs.

D. Final Cleaning Up:

Prior to final inspection and acceptance of the work, clean all work under this contract and any existing building components, fixtures, machinery, equipment, parking lots, plants, etc. that are soiled by the Contractor's operations.

END OF SECTION

SECTION 01630

PRODUCT SUBSTITUTIONS

PART 1: GENERAL

1.01 DESCRIPTION:

This section covers mandatory provisions for substitution procedures after Contract award.

1.02 CONSIDERATION OF SUBSTITUTIONS:

Substitutions for specified products will be considered only if the specified product is not obtainable; or if delivery date of specified product is such that scheduled date of substantial completion of the work will be delayed if the specified product remains a requirement, provided the Engineer is notified of this condition within 30 days from the date of Contract; or if, after any order has been placed, circumstances beyond the Contractor's control, such as labor disputes affecting manufacture or delivery of product cause such a delay, or for any other reason the Owner agrees the substitution may be in his best interest.

Qualifications: Substitutions will not be considered if:

- A. They are indicated or implied on shop-drawing submittals without having been formally requested in accordance with provisions specified herein.
- B. For their implementation, they require a major revision in the work in order that their use may be accommodated.
- C. They materially alter the design concept, including color or function originally intended by the specified project.
- D. They do not meet all of the physical and performance requirements contained in the Project Specifications for the specified product.
- E. They do not equal or exceed the product specifications for the specified product.

1.03 CONTRACTOR'S REPRESENTATION:

By submitting the Request for Substitution, the Contractor represents that he:

- A. Has investigated the proposed substitute product, and
- B. Has determined, by his best judgement and experience, that proposed substitution is either necessary or in the Owner's best interest.
- C. Will coordinate the installation of the accepted substitution, making such changes as may be required for the work to be complete in all respects.

1.04 SUBMISSION PROCEDURES ON SUBSTITUTIONS:

State reason for making the request.

Identify product for which substitution is proposed by brand name and catalog number, giving Specifications Section and Article number where specified.

Identify, in similar manner, proposed substitution.

Itemize differences between products specified and proposed substitution including, but limited to, physical, color, function, and guarantee considerations.

Itemize changes in adjacent work occasioned by proposed substitutions.

Accompany request with test data from independent laboratory substantiating quality and performance of proposed substitutions.

Attach manufacturer's complete instructions on storage, handling, and installation.

Provide list of three projects, giving names, addresses and phone numbers of Owners, General Contractors, and Architects or Engineers, where proposed product has been used.

State proposed change to the Contract Sum and proposed change to the Contract Time if substitution is accepted and confirmed by Change Order. If the proposed substitution involves a change to the Contract Sum, any change in cost of adjacent or related work shall be included also.

State the number of days (not less than 15) during which the substitution as submitted is subjected to acceptance.

1.05 ACCEPTANCE OR REJECTION:

The Project Engineer will promptly review requests for substitutions complying with the above provisions.

If no exceptions are taken, the substitution will be confirmed by Bulletin and a subsequent Change Order.

If rejected, the Contractor will be promptly notified and the Contractor shall proceed with the work in accordance with the Contract Documents. Substitutions may be rejected without explanation and without cause.

SECTION 01700

CONTRACT CLOSEOUT

PART 1: GENERAL

1.01 CLOSEOUT PROCEDURES:

A final inspection shall be conducted at completion of entire work with the Contractor, The Owner, Project Engineer, material manufacturers' representatives, and other designated persons.

The results of the inspection conducted by these parties shall be submitted in writing to the Owner.

Contractor shall remedy any and all deficiencies prior to final acceptance by the Project Engineer.

Follow project closeout guidelines in the State Construction Office Manual.

1.02 FINAL CLEANING:

Execute cleaning prior to final inspection.

Clean all interior and exterior surfaces to remove stains and foreign substances. Clean any equipment as required. Clean and restore any area to the original condition.

Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.03 PROJECT RECORD DOCUMENTS:

Provide record documents at the completion of the project. Record documents shall contain all information regarding any changes that were executed in the work.

Provide any guaranty/warranty properly executed in triplicate.

Guaranty/warranty shall state name of project, location, name of Owner, name of applicator, and date of final acceptance. Date of final acceptance will be as determined by the Project Engineer for the entire system.

SECTION 02072

DEMOLITION

PART 1 - GENERAL

1.01 WORK INCLUDED IN THIS SECTION:

The extent of the demolition work is described in the contract drawings and as specified herein. In general, this work shall include the following:

- A. Removal and disposal off-site of the building materials, roof shingles, metal accessories, and damaged wood trim.
- B. Protection of the Owner's existing building and equipment throughout the work.

Obtain any required permits and comply with all local ordinances for demolition, disposal of waste, and safety standards.

- A. Clean up work on a daily basis.
- B. Provide necessary temporary protection structures, guard rails, barricades, and building access protection. Provide signage as required to direct access to/from building.
- C. Provide waste disposal containers. Do not use the Owner's containers.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

Section 01400 – Quality Requirements: Cleaning Up

1.03 SUBMITTALS:

Submit in triplicate a copy of all permits and certificates required for work of this section.

Submit in triplicate demolition procedures, equipment, and operational sequence for review by the Owner and the Project Engineer. These procedures shall include the following:

- A. Description of equipment and method proposed for use.
- B. Description of methods for disposal of debris.
- C. Description of methods and procedures for protecting existing building equipment and fixtures.

1.04 PROTECTION:

Safety measures and methods shall be used to protect personnel and property that is to remain undisturbed, including trees, shrubs, lawns, and walkways.

Do not interfere with use of the building. Maintain free and safe passage to and from the building at the existing entrances. Construct temporary structures at the entrances to provide overhead protection for pedestrians.

Cease operations and notify the Project Engineer immediately if safety of structure appears to be endangered. Take precautions to properly support structure. Do not resume operations until safety is restored.

Provide protection to adjacent areas where work is in progress. Cover and protect adjacent construction if necessary.

Provide protection for the window and door units on the existing building during work.

Contractor shall repair all damage to the satisfaction of the Project Engineer and the Owner.

1.05 JOB CONDITIONS:

A. Condition of Structures:

Bidders for this work shall make such investigations as they deem necessary to arrive at a contract price. No extras will be paid for conditions not hidden which a prudent bidder should be able to ascertain from the Contract Documents in conjunction with an inspection of the field conditions.

Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner insofar as practicable.

PART 2 – PRODUCTS

2.01 MATERIALS:

Remove the defined portions of the existing canopy in a manner that will prevent breakage or undue damage to the existing structure.

PART 3 – EXECUTION

3.01 PREPARATION:

Maintain exit requirements. Locate guardrails or barricades as required to protect workers and personnel using the building.

Carry out demolition work to cause as little inconvenience to occupied building areas as possible.

3.02 DEMOLITION:

All demolition shall be performed in accordance with applicable codes and regulations of authorities having jurisdiction.

Repair all demolition performed in excess of that required, at not cost to the Owner.

Periodically monitor interior of building to ensure that demolition is not causing damage to interior finishes such as plaster, drywall, etc.

3.03 REMOVAL:

Remove demolished materials, debris, dust, tools and equipment from site upon completion of work. Leave site in a condition acceptable to the Project Engineer and the Owner.

Transport all materials removed from demolished area and dispose of off-site.

3.04 REPAIR:

All damage done to existing structures that are to remain shall be repaired to the satisfaction of the Project Engineer and the Owner. Any unsightly places shall be cleaned up and the building and site left in a neat and orderly condition. All trees, shrubs, or lawns during the construction shall be replaced or re-seeded by the contractor at no expense to the Owner with the same species, type, and size of similar plant material to the satisfaction of the Owner and the Engineer. All walkways or drives damaged by the construction shall be repaired as directed by the Engineer at no cost to the Owner.

SECTION 05500 – MISCELLANEOUS METALS

PART 1: GENERAL

1.01 SECTION INCLUDES:

- A. Work as described in this Section.
- B. Work shown on Drawings (excluding that noted hereinbefore).

1.02 QUALITY ASSURANCE:

- A. References: Some products and execution are specified in this Section by reference to published specifications or standards of the following (with respective abbreviations used).

American Iron and Steel Institute	(AISI)
American Institute of Steel Construction	(AISC)
American Society for Testing and Materials	(ASTM)
American Welding Society	(AWS)
American Hot Dip Galvanizers Association	(AHDGA)
Occupational Safety and Health Administration	(OSHA)

- B. Manufacturers:

- 1. Standard: For purpose of designating type and quality for the work under this Section, Drawings and Specifications are based on products manufactured or furnished by manufacturers listed in Part 2 of this Section for specific product.
- 2. Sources: Products for work of this Section for use on Project shall be of one manufacturer for each specific function unless noted specifically otherwise herein.

- C. The current edition of the following references shall apply to work of this Section. Suffixes indicating date of issue are omitted from reference numbers used in the text of this Section. Codes and Standards: Comply with provisions of following, except as otherwise indicated:

AISC	"Code of Standard Practice for Steel Buildings and Bridges"
AISC	"Specifications for Design, Fabrication, and Erection of Structural Steel for Buildings", including "Commentary" and Supplements thereto as issued
AISC	"Specifications for Structural Joints using ASTM A325 or A490 Bolts" approved by Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation
AWS D1.1	"Structural Welding Code"
ASTM A6	"General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use"
ASTM A123	"Standard Specification for Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip"
ASTM A153	"Standard Specification for Zinc Coating (Hot-Dip) on Assembled Steel Hardware"
ASTM A386	"Standard Specification for Zinc Coating (Hot-Dip) on Assembled Steel"

Products"

ASTM A780 "Standard Practice of Repair of Damaged Hot-Dip Galvanized Coatings"
Building Code: North Carolina State Building Code, 2018 Edition

- D. Qualifications for Welding Work: Qualify welding processes/welding operators in accordance with AWS "Standard Qualification Procedure". Provide certification that welders to be employed have satisfactorily passed AWS qualification tests within previous twelve (12) months. If recertification of welders is required, retesting will be Contractor's responsibility.
- E. Design Criteria for Members and Connections: All details shown on Drawings are typical. Similar details shall apply to similar conditions, unless indicated otherwise. Verify dimensions at the Site without causing delay in work. Promptly notify the Project Engineers whenever design of members and connections for any portion of the structure are not indicated clearly. Design any connections not specifically detailed on the Drawings. Submit design for the Project Engineer's approval. Design shall be in accordance with the latest AISC Specifications, and shall safely support the maximum design load reaction according to the AISC Specifications for the spans indicated on the Drawings.
- F. Substitutions: Substitutions of members or parts of equal quality, utility, and strength may be made only upon written approval by the Project Engineer, however, no increase in costs to the Owners will be allowed.

1.04 SUBMITTALS:

A. Shop Drawings:

- 1. Submit shop drawings in accordance with Section 01340.
- 2. Use of sepia transparencies of Contract Drawings for shop drawings will not be acceptable.
- 3. Only shop drawings checked and stamped "approved by Contractor and Fabricator" will be accepted for review.
- 4. Submit shop drawings for all work of this Section. Show layout, arrangement, dimensions, profiles, details, materials, connections, finishes, hardware, accessories, anchorage, and relation to adjacent work.

B. Product Data:

- 1. Submit Manufacturer's printed technical, physical, and performance data on the following:
 - a. Expansion or adhesive anchors

C. Manufacturer's Data for Use In Construction Administration:

- 1. Submit Manufacturer's printed application or installation instructions for the following:

- a. Expansion or adhesive anchors
- b. Hot-dip galvanizing

1.05 DELIVERY, STORAGE AND HANDLING:

- A. Deliver work of this Section to Project Site at such intervals and in such sequence as to insure uninterrupted progress of work.
- B. Store materials and work of this Section in an arrangement and in a manner that will permit easy access for inspection and identification, and that will keep handling to a minimum. Store materials in staging area approved by the Owners.
- C. Keep work covered, off of ground, using non-corrosive supports. Protect work from mud, corrosion, and deterioration. Protect from accumulation of water.
- D. Do not store work on the existing roof structure in a manner that might cause distortion or damage to the roofing materials, the members or to supporting structures. Repair or replace damaged work as directed.

PART 2: PRODUCTS

2.01 MATERIALS:

- A. Metals: Except as required specifically otherwise elsewhere in the Contract Documents, the following material requirements shall apply to work of this Section:
 - 1. Structural Steel: ASTM A992
 - 2. Miscellaneous Steel: ASTM A36
 - 3. Steel Tubing: ASTM A500, Grade B.
 - 4. Plate Stock Stainless Steel: ASTM A167, Type 302 or 304
- B. Expansion and Adhesive Anchors:
 - 1. Anchors shall be of type and size shown on Drawings or as specified for specific item of work herein. Bolts shall be a minimum of 1/2" diameter. Embedment shall be a minimum of 3" into concrete or masonry. See Drawings for specific embedment requirements.
 - 2. Provide bolts with hex-nuts and washers.
 - 3. Anchors shall be stainless steel.
- C. Coatings: Unless otherwise noted on the drawings
 - 1. Refer to Specification Section 09900 for primer and paint finish on signage curbs and

frames.

2. All new fabricated assemblies, equipment platforms, and components install on the exterior of the building or in areas of non-conditioned space are to receive hot-dipped galvanized coating in accordance with ASTM A123.
3. Steel fabrications and equipment platform bracing components installed on the interior side of the building (within conditioned space) shall be shop primed with 2 coats of a fast-drying rust inhibiting primer designed to protect steel and iron substrates. Primer shall be capable of receiving a finished paint coat.

2.02 FABRICATION:

A. General Requirements for Fabrication:

1. Steel shall be well-formed to shape and size, with sharp angles and lines. Shearing and punching shall leave clean, true lines and surfaces.
2. Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with the AISC Specifications, and as indicated on final shop drawings.
3. Properly mark and match-mark materials for field assembly. Fabricate for delivery in sequence which will expedite erection and will minimize field handling of materials.
4. Fastenings:
 - a. Thickness of metal and details of assembly and supports shall have ample strength and thickness.
 - b. For work of this Section, provide holes and connections for the work of other trades.
5. Work shall conform to details on Drawings, and shall be in accordance with approved shop drawings and submittals.
6. Welded joints shall be full, and ground smooth. Grinding shall not produce dips, reduction, or change of profile of member.

B. Welding:

1. Welding shall be performed (in field or in shop) by experienced welders certified by the American Welding Society.
2. Welding electrodes shall be ASTM A233 – E70 Series, Low Hydrogen. Comply with AWS Code for welding.

PART 3: EXECUTION

3.01 SCHEDULE:

A. Examination:

1. Erector shall examine areas and conditions under which structural steel shall be installed.
2. Erector shall notify the Project Engineer in writing of conditions detrimental to proper and timely completion of the work.
3. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Erector.

B. Miscellaneous Reinforcing and Bracing:

1. Provide miscellaneous metal shapes for bracing and support of related work as detailed on Drawings and where not required specifically elsewhere in Contract Documents.

C. Field Assembly:

1. Set structural steel accurately to lines and elevations indicated. Align and adjust the various members forming a part of a complete frame or structure before permanently fastening.
2. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly.
3. Perform necessary adjustments to compensate for discrepancies in elevations or alignment. Level and plumb individual members of the structure within specified AISC tolerances.
4. Splice members only where shown or specified. No splice or other connection, welded or otherwise, shall be made without having been detailed on the shop drawings or permitted in writing by the Engineer.
5. Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
6. No permanent bolting or welding shall be done until structure has been properly aligned and plumbed.
7. Do not enlarge unfair holes in members by burning or by use of drift pins. Ream holes that must be enlarged to admit bolts, with approval of the Project Engineer.
8. Do not used gas cutting torches in the field for correcting fabrication errors in structural framing.

D. Repair of Galvanizing:

1. Galvanized surfaces (and also surfaces which were not shop coated during fabrication) that are abraded or damaged at any time after the application of zinc coating shall be repaired by thoroughly wire brushing the damaged areas and removing all loose and cracked coating, after which the cleaned areas shall be

painted with 2-coats of zinc-rich paint. Zinc-rich paint shall be thoroughly mixed prior to application, and shall not be tinted. The total thickness of the 2-coats shall not be less than 6-mils. In lieu of repairing by painting with zinc-rich paint, other methods of repairing galvanized surfaces in accordance with ASTM A780 may be used provided the proposed method is acceptable to the Engineer.

END OF SECTION 05500

SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

1.01 SECTION INCLUDES:

1. Furnish and install new miscellaneous wood blocking, framing, and nailers as shown on Project Drawings as specified herein.
2. Replacement of wet, rotten, warped deteriorated or otherwise damaged wood trim.
3. Furnish and install new wood shims and wood blocking and nailers as shown on Project Drawings.

1.02 QUALITY ASSURANCE:

1. References: Some products and execution are specified in this section by reference to published specifications or standards of the following (with respective abbreviations used).
 - A. American Wood Preservations Association (AWPA).
 - B. U.S. Dept. of Commerce Voluntary Product Standards (PS).

1.03 SUBMITTALS:

1. All submittals shall be provided in accordance with Section 01340 and as specified herein.
2. Shop Drawings: Show wood nailers and fasteners used in work of this section integrated in shop drawings required for work of other sections.
3. Certificates: Submit written certificates from processor of preservative treatment, stating type of treatment, manufacturer of treating material, and degree of treatment of wood members processed for this project. Certificate shall be signed by an officer of the company.
4. Samples: Submit samples (in duplicate) of all fasteners used for securing work of this section.
5. Product Data: Submit technical data on all fasteners required for work of this section. Data shall include load capacities (pull-out values) from applicable substrates and types of corrosion resistant coatings.

1.04 DELIVERY, STORAGE, AND HANDLING:

1. Storage and handling of materials shall be in strict accordance with the following instructions.
 - A. Materials delivered to site in a wet condition shall be rejected and removed off of Owner's property.
 - B. Stack lumber to insure proper ventilation and drainage. Protect lumber from the elements.
 - C. Store in a manner that will prevent warpage.

1.05 JOB CONDITIONS:

1. Time delivery and installation of carpentry to avoid delaying other operations whose work is dependent on or affected by the carpentry work.
2. Protect installed carpentry from damage due to other work activities and weather.
3. Select fasteners for attachment of carpentry based on substrate and required securement and as described in the Project Drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General

1. Provide lumber with each piece factory-marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill. For exposed lumber furnish pieces with grade stamps applied to ends or back of each piece; or omit grade stamps entirely and provide certificates of grade compliance issued by inspection agency.
 2. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use. Provide dressed lumber, S4S, unless otherwise indicated. Provide seasoned lumber with 15 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated.
- B. Provide dimension lumber (2" to 4" thick, 2" to 12" wide) for framing rough carpentry such as rafters, joists, and plates and blocking of the following species and grade:
1. Southern Pine, Number 2 Grade, or better.
- C. Provide boards (less than 2" thick nominal) in sizes indicated.

1. Where boards will be exposed in the finished work, provide maximum moisture content of 15%, MC15" or "K-D". Where painted finish is indicated, provide Southern Pine, #2 boards (SPIB), or Douglas-Fir Construction Boards (WCLB or WWPA).
 2. Where boards will be concealed by other work, provide lumber of 19% maximum moisture content, Southern Pine # 2 Boards (SPIB) or any species graded standard boards.
- D. Provide miscellaneous wood for support or attachment of other work including cant strips, bucks, nails, blocking, furring, grounds, stripping and similar members. Provide lumber of sizes indicated, worked into shapes shown, moisture content of less than 10% maximum for lumber items not specified to receive wood preservative treatment.
1. Construction Grade light framing size lumber of any species or board size lumber as required. Provide #2 boards (SPIB or WWPA).
- E. Provide plywood sheathing where shown on the Drawings with a minimum APA panel span rating of 40/20 for Exposure 1.
- F. Provide Engineered Lumber Products (LVL's) in accordance with the minimum strength requirements shown on the Drawings.
- G. Provide all rough hardware and metal fasteners of the size, type, material, finish as indicated on the drawings and recommended by applicable standards complying with the North Carolina Building Code and Federal Specifications for nails, staples, screws, bolts, nuts, washers, and anchoring devices. Provide metal hanger/framing anchors of size/type recommended by manufacturer for each use including recommending nails. Size and type should be in accordance with the North Carolina Building Code for live and dead loads requirements. Where rough carpentry work is exposed to weather, in ground contact, or area of high relative humidity, provide fasteners/anchorage's with hot-dip zinc coating (ASTM A153).
- H. Where lumber is indicated as "Trt-Wd", "P.T.", or "Treated", or specified herein to be treated, comply with applicable requirements of AWPAs Standards, and of AWPAs Standards listed below. Mark each treated item with the AWPAs Quality Mark Requirements.
1. Pressure treated lumber shall be rated for ground contact via the use of Dispersed or Micronized Copper (MCA or MCQ) in accordance with AWPAs Standard U1-17, Category UC4A. After treatment, kiln-dry lumber to maximum moisture content of 10%.
 2. All treated lumber shall be clearly labeled as required by the N.C. Building Code
 3. Wood preservative shall be approved by the EPA.

2.02 ACCESSORIES:

- A. Nails: Shall be minimum 12-gauge, galvanized, annular thread with minimum 3/8-inch flat head and length as required by construction.
- B. Screws: All screws shall be stainless steel (Series 300) for exposed applications and heavy-duty fluorocarbon coated steel (unless otherwise noted) for non-exposed applications and shall meet or exceed FM Specification number 4470.
- C. Washers: Shall match finish for exposure of screws.

PART 3 - EXECUTION

3.01 EXAMINATION:

- 1. Contractor must examine the substrate and supporting structure and the conditions under which the work is to be installed. Notify the Engineer in writing of conditions detrimental to the work. Do not proceed with the installation until unsatisfactory conditions have been corrected.
- 2. Discard new units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate the work with a minimum of joints or the optimum jointing arrangement.
- 3. Existing nailers (blocking) which are unsound, warped, bowed, twisted, etc. are to be replaced as necessary to provide a suitable substrate to receive new sheet metal.
- 4. Furnish and install supplemental fasteners for attachment of existing wood blocking to remain in accordance with the Project Drawings.

3.02 INSTALLATION:

- 1. General:
 - A. Fit carpentry work to other work. Scribe and cope as required for accurate fit.
 - B. Set carpentry work accurately to require levels and lines with members plumb and true.
 - C. Securely attach carpentry work to substrates by anchoring and fastening as specified and as required by applicable building codes.
 - i. Provide washers under bolt heads and nuts in contact with wood.
 - ii. Countersink fastener heads where detailed on Project Drawings.

- D. Make tight connections between members. Install fasteners without splitting of wood; predrill as required. Tighten screws at installation and retighten as required for tight connections prior to the closing in or at completion of work. A minimum of two fasteners shall be used per section regardless of length.

2. New Blocking and Nailers:

- A. Install new blocking and nailers where shown on Project Drawings or as required by other construction.
- B. Install new blocking and nailers with a 1/4-inch gap between each length, or as required based on climatic conditions at the time of installation.
- C. Wood blocking and nailers shall be chamfered, beveled, shaved, planed, or shimmed as necessary to provide smooth transition to adjacent materials.
- D. All wood blocking and nailers shall be sufficient thickness to be flush with insulation/ membrane interface and securely anchored to resist a force of 350 pounds per linear foot in any direction (minimum 12 inches o.c.).
- E. Install in accordance with Project Drawings.

- 3.03 WORKMANSHIP: Work of this section which does not conform to specified requirement, including tolerances and finishes, shall be corrected and/or replaced as directed by Engineer, at Contractor's expense, without extension of time. Contractor shall also be responsible for cost of corrections to any work affected by or resulting from correction to work of this section.

END OF SECTION 06100

SECTION 06200

EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.01 Section Includes:

- A. Exterior wood trim
- B. Plywood Soffits

1.02 Related Sections:

- A. Rough carpentry (Section 06100).
- B. Painting and finishing (Section 09900).

1.04 Submittals:

A. Product Data:

1. Include data and ICC-ES Evaluation Reports for wood-preservative treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained. Include chemical-treatment manufacturer's written instructions for finishing treated material.
2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced before shipment to Project site to levels specified.
3. Include copies of warranties from chemical-treatment manufacturers for each type of treatment.

B. Shop Drawings:

1. Submit shop drawings in accordance with Section 01340.
2. Submit shop drawings and product data containing shapes, profiles, and wood treatment.
3. Only shop drawings checked and stamped "Approved by Contractor" will be acceptable for review.
4. Show kind of materials, colors, finish, size of members, method of securing members together and to adjacent work, and location of hardware. Details shall be shown either full size or at scale of 3" = 1'-0". Show profiles of small moldings

at full size.

B. Samples: Submit in accordance with Section 01340.

1. Submit four finished samples of each species and cut of wood to be used. Lumber samples to be minimum 6" by 12". Samples shall represent the range of color and grain expected to be provided.

1.05 Delivery, Storage, and Handling:

- A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation. Protect materials from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.01 Materials:

- A. Lumber for fascia and trim boards: DOC PS 20 and the following grading rules:
1. SPIB: The Southern Pine Inspection Bureau, "Standard Grading Rules for Southern Pine Lumber."
- B. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill. For exposed appear lumber for staining, mark grade stamp on end or back of each piece.
1. Southern Pine No. 1 or C&Btr with pressure treatment outlined herein
- C. Softwood Plywood: Conforming to PS 1, and produced by a member of the American Plywood Assn., APA tested.
1. Use Grade "A" where semi-exposed and Grade "D" where completely concealed.
 2. Exterior Soffits - AC sanded plywood panel suitable for repeated wetting and redrying or long-term exposure to weather and other conditions of similar severity. Provide to match existing T1-11 groove pattern and space

2.02 Wood-Preservative-Treated Fascia and Trim Boards:

- A. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC3B.
1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 12 percent.
 2. Preservative Chemicals: Micronized Copper (MC) or Micronized Copper Azole

(MCA)

3. For exposed items indicated to receive transparent finish, do not use chemical formulations that contain colorants or that bleed through or otherwise adversely affect finishes.
4. Do not use material that is warped or does not comply with requirements for untreated material.
5. Mark lumber with treatment-quality mark of an inspection agency approved by the American Lumber Standard Committee's Board of Review.
 - a. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.
6. Mark plywood with appropriate classification marking.
 - a. For exposed plywood indicated to receive a stained or natural finish, mark back of each piece.
7. Application: All exterior lumber and plywood.

2.03 Fabrication:

A. General:

1. Where required, fabrication shall be in a shop by mechanics skilled in wood joinery. Fabricate in as large sections as can be moved through openings. Joints between sections shall be inconspicuous, permanently secure, and with no apparent interruption of continuity of assembly when in place.

PART 3 - EXECUTION

3.01 Examination:

- A. Verify the adequacy and proper location of any required backing or support framing.
- B. Verify that mechanical, electrical, plumbing, and other building components affecting work in this Section are in place and ready.

3.01 Installation:

- A. Installation shall be secured in place, level, plumb, square, and without racking.
- B. All work abutting other building components shall be properly scribed.

- C. Mechanical fasteners used at exposed shall be countersunk and concealed.
- D. Mechanical fasteners used at semi-exposed surfaces shall be countersunk.

END OF SECTION

SECTION 07300

HIGH-TEMPERATURE ROOFING UNDERLAYMENT

PART 1 – GENERAL

1.01 SECTION INCLUDES:

- A. Provide and install a self-adhering sheet membrane used as underlayment for sloped roofs as shown on the Project Drawings and as specified herein. Include supplementary materials and installation accessories required for a complete and proper installation.

1.02 RELATED SECTIONS:

- A. Rough Carpentry (Section 06100)
- B. Preformed Metal Standing Seam Roofing (Section 07410).

1.03 QUALITY ASSURANCE:

- A. References: Some products and execution are specified in this section by reference to published specifications or standards of the following (with respective abbreviations used):
 - 1. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
 - 2. ASTM D461 - Standard Test Methods for Felt.
 - 3. ASTM D 903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
 - 4. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
 - 5. ASTM D3767 - Standard Practice for Rubber—Measurement of Dimensions.
 - 6. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
 - 7. ASTM G90 – EMMAqua test.
- B. Regulatory Requirements: Comply with requirements of authorities having jurisdiction and applicable codes at the location of the project.
- C. Manufacturer: Minimum 10 years' experience producing roofing underlayment.
- D. Installer: Minimum 2 years' experience with installation of similar underlayment.

1.04 SUBMITTALS:

- A. All submittals shall be provided in accordance with Section 01012 and as specified herein.
- B. Product Data: Submit manufacturer's product data and installation instructions.

1.05 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver materials and products in unopened factory labeled packages. Protect from damage.
- B. Cover materials and store in dry condition between temperatures of 40° F. and 90° F. Use within one year of date of manufacture. Do not store at elevated temperatures as that will reduce the shelf life of the product.

PART 2 – PRODUCTS

2.01 MATERIALS:

- A. High Temperature Self-Adhering Sheet Membrane Roof Underlayment: Cold applied, self-adhering membrane composed of an asphalt-based adhesive and interwound with a disposable release sheet. An embossed, slip resistant surface is provided on the high-performance film with UV barrier properties.
 - 1. Membrane Thickness: minimum 40 mils per ASTM D3767 Method A.
 - 2. Membrane Tensile Strength: MD 33 lbf/in, CD 31 lbf/inch per ASTM D412 Die C Modified.
 - 3. Membrane Elongation: 250% per ASTM D412 Die C Modified.
 - 4. Low Temperature Flexibility: Unaffected at -20° F per ASTM D1970.
 - 5. Adhesion to Plywood: 5.0 lbs/in. width per ASTM D903.
 - 6. Maximum Permeance: 0.05 perms per ASTM E96.
 - 7. Maximum Material Weight Installed: 0.22 pounds/sqft per ASTM D461.
 - 8. Service Temperature: 260 degrees F per ASTM D1204
 - 9. Compatibility: Suitable for use under all types of sloped roofing with the exception high altitude climates where zinc, copper or Cor-Ten roof coverings are used.
 - 10. Adhesive: Rubberized asphalt adhesive containing post-consumer recycled content, contains no calcium carbonate, sand or fly ash.
 - 11. Exposure: Can be left exposed for a maximum of 120 days from date of installation per ASTM G90 – EMMAqua test.
 - 12. Primer: Provide a water-based primer over all contact surfaces that is recommended by the product manufacturer

2.02 ACCEPTABLE MANUFACTURERS

Provide products from one of the following manufacturers; or an approved equal:

- A. GCP applied technologies, Cambridge, MA (www.gcpat.com)
- B. Tamko Building Products, Galena, KS (www.tamko.com)
- C. Henry Company, El Segundo, CA (www.henry.com)

PART 3 – EXECUTION

3.01 EXAMINATION: Prior to start of installation, inspect existing conditions to ensure surfaces are suitable for installation of roofing underlayment. Verify flashing has been installed. Starting work indicates installers acceptance of existing conditions.

3.02 INSTALLATION:

- A. Installation: Install roofing underlayment on sloped surfaces at locations indicated on the Drawings, but not less than at hips, ridges, eaves, valleys, sidewalls and chimneys, and surfaces over interior space within 36 inches (914 mm) from the inside face of the exterior wall. Strictly comply with manufacturer's installation instructions including but not limited to the following:
1. Schedule installation such that underlayment is covered by roofing within the published exposure limit of the underlayment.
 2. Do not install underlayment on wet or frozen substrates.
 3. Install when surface temperature of substrate is a minimum of 40° F. and rising.
 4. Remove dust, dirt, loose materials and protrusions from deck surface.
 5. Install membrane on clean, dry, continuous structural deck. Fill voids and damaged or unsupported areas prior to installation.
 6. Install membrane such that all laps shed water. Work from the low point to the high point of the roof at all times. Apply the membrane in valleys before the membrane is applied to the eaves. Following placement along the eaves, continue application of the membrane up the roof. Membrane may be installed either vertically or horizontally after the first horizontal course.
 7. Side laps minimum 4 inches and end laps minimum 6 inches following lap lines marked on underlayment.
 8. Patch penetrations and damage using manufacturer's recommended methods.

3.03 CLEANING AND PROTECTION:

- A. Protection: Protect from damage during construction operations and installation of roofing materials. Promptly repair any damaged or deteriorated surfaces.
- B. Repair minor damage to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired in the opinion of the Architect.
- C. Provide temporary protection to ensure work being without damage or deterioration at time of final acceptance. Remove protective film and reclean as necessary immediately before final acceptance.

END OF SECTION

SECTION 07410

PREFORMED METAL STANDING SEAM ROOFING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. This section covers the pre-finished, pre-fabricated Architectural standing seam roof system. All metal trim, accessories, fasteners, insulation and sealants indicated on the Drawings as part of this section.
- B. Drawings and general provisions of the Contract, including general and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 SUMMARY

- A. Section Includes
 - 1. Factory formed Standing Seam metal roof panels

1.03 DEFINITIONS

- A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal, and accessories necessary for a complete weather-tight roofing system.
- B. References:
 - 1. American Society for Testing and Materials (ASTM)
 - a. ASTM A653: Steel Sheet, Zinc Coated by the Hot Dip Process
 - b. ASTM A792: Steel Sheet, Aluminum-Zinc Alloy Coated by the Hot Dip Process
 - c. ASTM B209: Aluminum and Aluminum Alloy Sheet and Plate
 - d. ASTM B370 Standard Specification for Copper Sheet and Strip for Building Construction
 - e. ASTM E283 Air Leakage
 - f. ASTM E331 Water Penetration
 - g. ASTM 1646 Water Penetration
 - h. ASTM E1680 Air Infiltration and Exfiltration
 - 2. Underwriters Laboratory
 - a. UL Building Materials Directory
 - b. UL Construction No. 274, 274a, and 369 for Uplift Test 580 Class 90
 - 3. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
 - a. SMACNA Architectural Sheet Metal Manual, 7th edition, 2012
 - 4. American Iron and Steel Institute (AISI)
 - a. AISI Cold Formed Steel Design Manual
 - 5. Aluminum Association
 - a. Aluminum Design Manual
 - 6. Metal Construction Association
 - a. Preformed Metal Wall Guidelines
 - 7. Code References

- a. ASCE 7, Minimum Loads for Buildings and Other Structures
- b. 2012 North Carolina State Building Code

1.04 QUALITY ASSURANCE

- A. Manufacturer and erector shall demonstrate experience of a minimum of ten (10) years in this type of project.
- B. Panel installer shall have a minimum of two (2) years' experience in the installation of concealed clip architectural standing seam metal roofing and show evidence of successful completion of at least three (3) projects of similar size, scope, and complexity.
- C. Panels shall be factory-produced only. No portable, installer-owned or installer-rented machines will be permitted.

1.05 SUBSTITUTIONS

- A. The material, products and equipment specified in this section establish a standard for required function, dimension, appearance and quality to be met by any proposed substitution.

1.06 ROOF SYSTEM PERFORMANCE TESTING

- A. General Performance: Metal roof panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation or other defects in construction.
- B. Roof System shall be designed to meet 2018 North Carolina State Building Code Wind Load requirements.
- C. Panels to meet:
 - 1. When tested per ASTM E1680 and ASTM E1646 there shall be no uncontrolled water penetration or air infiltration through the panel joints.
 - 2. Roof System shall be designed to meet a UL Class 90 wind uplift in accordance with UL 580; and panel system shall meet the requirements of ASTM E1592.
 - 3. UL 2218 - Impact Resistance rated.

1.07 WARRANTIES

- A. Weather-tight warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing seam metal roof panel assemblies that fail to remain weather-tight, including leaks, within specified warranty period.
 - 1. Warranty Period: 20 Years from date of Final Acceptance
- B. Finish warranty: Manufacturer's standard form in which manufacturer agrees to repair finish or replace standing seam metal roof panels that show evidence of deterioration of factory-applied finish within specified warranty period.
 - 1. Exposed Panels Finish - deterioration includes the following:
 - a. Color fading more than 5 hunter units when tested according to ASTM D2244
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214
 - c. Cracking, checking, peeling or failure of paint to adhere to a bare metal.
 - 2. Warranty Period: 30 Years from the date of Final Acceptance

- C. Applicator shall furnish written warranty for a two (2) year period from date of Final Acceptance of building covering repairs required to maintain roof and flashings in watertight condition.

1.08 SUBMITTALS

- A. Furnish detailed drawings showing profile and gauge of exterior sheets, location and type of fasteners, location, gauges, shape and method of attachment of all trim locations and types of sealants, and any other details as may be required for a weather-tight installation.
- B. Samples:
 - 1. Submit sample 12" long x full width panel, showing proposed metal gauge, seam profile and specified finish.
 - 2. Submit manufacturer's standard colors for Owner's selection.
- C. Shop drawings: Show fabrication and installation layouts of metal roof panels, metal wall panels or metal soffit panels, details of edge conditions, side-seam joints, panel profiles, corners, anchorages, trim, flashings, closures and accessories, and special details. Distinguish between factory and field-assembled work
- D. Coordination Drawings: Roof plans, drawn to approximate scale, on which the following are shown and coordinated with each other, based on input from installer of the items involved:
 - 1. Roof panels and attachments
 - 2. Metal trusses, bracings and supports
 - 3. Roof-mounted items including snow guards and items mounted on roof curbs.
- E. Test Reports:
 - 1. Submit the test reports prepared by Underwriters Laboratory indicating wind uplift rating of proposed roof system. The manufacturer must be listed by name in the UL Directory.
 - 2. Air leakage per ASTM E1680 and Water penetration per ASTM E1646 (Actual independent laboratory certified test results must be submitted).
- F. Certification: Submit manufacturer's certification that materials and finishes meet specification requirements.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Ordering: Comply with manufacturer's ordering instruction and lead time requirements to avoid construction delays.
- B. Deliver components, sheets, metal roof panels and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.
- C. Unload, store and erect metal roof panels in a manner to prevent bending, warping, twisting and surface damage.
- D. Stack metal roof panels on platforms or pallets, covered with suitable weather-tight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting or other surface damage.
- E. Protect strippable protective coating on any metal coated product from exposure to sunlight and high humidity, except to the extent necessary for material installation.

1.10 PROJECT CONDITIONS

- A. Weather Limitations: proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed.
- B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

1.11 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports and roof penetrations with actual equipment provided.
- B. Coordinate metal roof panels with rain drainage work, flashing, trim and construction of decks, parapet walls and other adjoining work to provide a leak proof, secure and non-corrosive installation.

PART 2 - PRODUCTS

2.01 PANEL DESIGN

- A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated, and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates and accessories required for a weather-tight installation.
- B. Roof panels shall be standing seam in minimum 16" widths, with min. of 1-1/2" high seams that are mechanically seamed together @ 90 degrees.
- C. Panels to be produced with Factory supplied hot melt mastic in the seams.
- D. Panels to be produced Smooth - Factory Standard.
- E. Panels to be designed for attachment with concealed fastener clips, spaced as required by the manufacturer to provide for both positive and negative design loads, while allowing for the expansion and contraction of the entire roof system resulting from variations in temperature.
- F. Forming: Use continuous end rolling method. No end laps on panels. No portable roll forming machines will be permitted on this project, no installer-owned or installer-rented machines will be permitted. It is the intent of the Architect to provide Factory-Manufactured panel systems only for this project.

2.02 ACCEPTABLE MANUFACTURERS

Provide products from one of the following manufacturers; or an approved equal:

- A. Petersen Aluminum Corp, Acworth, GA, (www.pac-clad.com)
- B. MBCI Metal Roof and Wall Systems, Richmond, VA (www.mbc.com)
- C. Architectural Building Components, Houston, TX (www.archmetalroof.com)
- D. Ultra Seam, Inc., Statesville, NC (www.ultraseam.com)

2.03 PERFORMANCE

Roofing materials shall have a minimum Solar Reflective Index (SRI) greater than 23. The SRI value for roofing materials on this project are intended to meet or exceed that of tested known SRI values for 3/4" heavy roof shakes with a natural finish.

2.04 MATERIALS AND FINISHES

- A. Preformed roofing panels shall be fabricated of 24-gauge pre-finished galvanized steel panels.
- B. Color shall be selected by Owner from Manufacturer's standard colors.
- C. Finish shall be Kynar 500 or Hylar 5000 Fluorocarbon coating with a top side film thickness of 0.70 to 0.90 mil over a 0.25 to 0.3 mil prime coat to provide a total dry film thickness of 0.95 to 1.25 mil, to meet AAMA 621. Bottom side shall be coated with a primer with a dry film thickness of 0.25 mil. Finish shall conform to all tests for adhesions, flexibility and longevity as specified by Kynar 500 or Hylar 5000 finish supplier.
- D. If strippable coating to be applied on the pre-finished panels to the top side to protect the finish during fabrication, shipping and handling, film shall be removed before installation.
- E. Trim: Trim shall be fabricated of the same color material and finish to match the profile, and will be press broken in lengths of 10 to 12 feet. Trim shall be formed only by the manufacturer of their approved dealer, and in accordance with standard SMACNA procedure and details. Trim to be erected in overlapped condition. Use lap strips only as indicated on drawings. Miter conditions shall be factory welded material to match the sheeting.
- F. Closures: use composition or metal profiled closures at the top of each elevation to close ends of the panels. Metal closures to be made in the same material and finish as face sheet.
- G. Substrate shall be high temperature resistant rubberized asphalt roofing underlayment over cement-wood-fiber deck panels.
- H. Roofing Underlayment
 - 1. Provide a high temperature self-adhered rubberized asphalt roofing underlayment in accordance with Specification Section 07300 - Roofing Underlayment
- I. Fasteners
 - 1. Clips to substrate: Screw shall be #10 diameter, self-tapping type (for attachment to wood), zinc-plated steel with a flat, phillips drive head.
 - 2. Counterflashings: exposed screws shall be stainless steel with a #14 x 1" combination steel and EPDM washer, color to match panel. Use bituminous separators between metals as required.
- J. Sealants
 - 1. Exterior grade silicone sealant (one of the following): DOW 795 (by Dow Corning); Pecora 890 (by Pecora Corporation); Silpruf (by GE); or approved equal.

2.05 FABRICATION

- A. Comply with dimensions, profile limitations, gauges and fabrication details shown and if not shown, provide manufacturer's standard product fabrication.
- B. Fabricate components of the system in factory, ready for field assembly.
- C. Fabricate components and assemble units to comply with fire performance requirements specified.

- D. Apply specified finishes in conformance with manufacturer's standard, and according to manufacturer's instructions.

2.05 ACCESSORIES

Provide the following accessories as specified here or where identified in the drawings:

- A. Snow Guards mounted to standing seam ribs using set screws. Snow guards shall be in two rows, staggered, and attached to standing seam as outlined in the drawings. Provide cast aluminum product with Type 302 passivated stainless steel set screws for securing to standing seam. Product shall have size, profile, and be equal to Snow Guard (RT) by Berger Building Products.
- B. Standing Seam Roof Clamps. Roof clamps shall be installed at locations shown in the drawings for support and bracing of signage components. Provide Roof Clamps made from aircraft aluminum with stainless steel hardware. Roof clamps shall be specifically designed to be compatible with the standing seam rib for this project. Product provided shall be equal to S-5 Roof Clamps as manufactured by Metal Roof Innovations, Ltd.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine alignment of structural steel and related supports, primary and secondary roof framing, solid roof sheathing, prior to installation.
- B. For the record, prepare written report, endorsed by installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 FASTENERS

- A. Secure units to supports
- B. Place fasteners as indicated in manufacturer's standards.

3.03 INSTALLATION

- A. Panels shall be installed plumb and true in a proper alignment and in relation to the structural framing. Install panels plumb, level, and straight with the seams parallel, conforming to the design as indicated.
- B. Install panel system so it is watertight, without waves, warps, buckles or distortions, and allow for thermal movement considerations.
- C. Installation shall conform to the standards set forth in the SMACNA architectural sheet metal manuals and the approved shop drawings detailed for the project.
- D. Install metal panels, fasteners, trim and related sealants in accordance with approved shop drawings and as may be required for a weather-tight installation.

- E. Apply sealant tape or caulking as necessary at flashing and panel joints to prevent water penetration.
- F. Remove all strippable coating and provide a dry-wipe down cleaning of the panels as they are erected.
- G. Snow guards and other roof-clamp accessories - install as per the manufacturer's instructions. Ensure set screws do not penetrate or damage metal roof paint finish. Paint finish is intended to act a separator of dissimilar metals.

3.04 WORKMANSHIP

- A. Repair or replace damaged metal panels and trim that does not meet the requirements of these Specifications at no additional cost to the Owner.

END OF SECTION

SECTION 07420

PREFORMED METAL WALL PANELS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

Drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 of Specifications, apply to work of this section.

1.02 SECTION INCLUDES:

Installation of Decor-Flush soffit/fascia/siding as shown on the drawings and herein specified.

1.03 QUALITY ASSURANCE:

A. References:

Some products and execution are specified in this section by reference to published specifications or standards of the following (latest edition, with respective abbreviations used):

The American Society for Testing and Materials	(ASTM)
American Iron and Steel Institute	(AISI)
Metal Construction Association	(MCA)
Sheet Metal and Air Condition Contractors National Association, Inc.	(SMACNA)

B. Codes and Standards:

Current edition of the following standard references shall apply to the work of this section except as indicated otherwise on the drawings or as specified herein:

ASTM A 653: Steel Sheet, Zinc-Coated by the Hot Dip Process
ASTM A 792: Steel Sheet, Aluminum-Zinc Alloy Coated by the Hot Dip Process.
ASTM B 209: Aluminum and Aluminum Alloy Sheet and Plate.
SMACNA Architectural Sheet Metal Manual, 1993 Edition.
ASCE, Minimum Loads for Buildings and Other Structures

1.04 SUBMITTALS:

A. Installation Instructions:

Submit (in triplicate) copies of manufacturer's printed instructions for installation of metal panel specified.

B. Manufacturer's Data:

Product Data: submit manufacturer's specifications, standard profile sheet, product data brochure. Provide shop drawings as required to show all relevant conditions, including but not limited to, elevations, plans, and sections of panel layout, profile, fasten pattern, each flashing/trim condition shall be submitted for approval prior to fabrication. Drawings shall contain material type, metal thickness and finish. Drawings shall clearly distinguish between factory and field fabrication.

C. Samples:

Submit sample 12" long x full width panel, showing proposed metal gauge, panel profile and specified finish. Submit all prefabricated trims and flashing, including but not limited to, inside

corner trim, outside corner trim, termination/pressure bars, starter and closure flashings, showing the proposed profile, metal gauge, and finish. Submit a full range of manufacturer's available colors for review and approval by the Owner and Engineer.

D. Field Samples:

A mock sample of all flashing and trim conditions should be provided for Engineer's review. These samples can be on the building as part of the work but must be approved. Field verify all dimension prior to fabrication of final products.

E. Guaranty-Warranty:

Applicator shall furnish written warranty for a two (2) year period from date of Final Acceptance of building covering repairs required to maintain wall and flashings in watertight conditions. Panel manufacturer shall provide a twenty (30) year warranty on the paint finish covering chalking, cracking, checking, chipping, blistering, peeling, flaking, and fading. Submit (in duplicate) guaranty-warranty on products and execution of coating work on exterior required by this section. Guaranty-Warranty for workmanship shall be submitted on applicator's company letterhead and shall be signed by an officer of the company. Guaranty-Warranty for the coating materials shall be submitted on the manufacturer's letterhead and shall be signed by an officer of the company.

1.05 QUALIFICATIONS:

A. Manufacturers:

Source: Products for use on this project shall be of the listed manufacturer unless noted specifically otherwise herein. Panel manufacturer shall have a minimum of ten (10) years of experience in manufacturing architectural wall in a permanent stationary indoor facility.

B. Applicators:

Submit letter from manufacturer of sealant materials stating that applicator is approved by the manufacturer for application of the materials specified for the project. Letter shall certify that the applicator has satisfactorily applied the types of materials specified on projects which have been completed for at least five (5) years. Letter shall be on manufacturer's letterhead and shall be signed by an officer of the company.

1.06 PRODUCT HANDLING:

A. Delivery and Storage:

Panels and flashings shall be protected and properly packaged to protect against transportation damage in transit to the jobsite. Store panels and flashings in a safe, dry environment under a waterproof covering to prevent water damage. Allow for adequate ventilation to prevent condensation. Panels and flashings with strippable film shall not be stored in direct sunlight.

B. Protection

Panels and flashings shall be protected and properly packaged to protect against transportation damage in transit to the jobsite. Upon exposure to direct sunlight, immediately remove strippable film from panels and flashings. Protect panels and flashings from foot traffic and from all other construction.

C. Replacements:

In the event of damage, immediately make all repairs and replacements to materials and to the building as necessary to the approval of the Engineer at no additional cost to the Owner.

1.07 JOB CONDITIONS:

A. Environmental Conditions:

Install material in temperature ranges as stated in the manufacturer's written instructions.

B. Protection:

Precautions shall be taken to avoid damage to any surface near the work due to mixing and handling of the waterborne coating.

PART 2 – PRODUCTS

2.01 MATERIAL AND FINISHES:

A. Prefinished preformed, concealed fastener metal wall panel

Shall be the following (or approved equal):

1. Fabral, Lancaster, PA., (www.fabral.com)
2. Petersen Aluminum Corp, Acworth, GA, (www.pac-clad.com)
3. MBCI Metal Roof and Wall Systems, Richmond, VA (www.mbc.com)

Basis of Design is Decor-Flush, concealed fastener panel as manufactured by Fabral

Panel shall have one 12" wide raised rib for a total coverage of 12". The 12" rib shall have a depth of 1" with two minor stiffening ribs centered in the flat of the panel to minimize potential oil-canning. The panels shall have an interlocking sidelap feature which hides the fasteners. Joints may be factory caulked to provide additional weathertightness.

Panels shall be attached to the substrate with concealed galvanized fasteners as recommended by the manufacturer.

Product composition and characteristics as follows:

Composition: 24 gauge Aluminum-Zinc Alloy Coated Steel

Wt./Sq. Plain: 156.1 lb.

Wt./Sq. Painted: 158.0 lb.

Metal Specification: Grade 50 (50Ksi yield strength weight AZ50 coating both conforming to ASTM A792

Finish: Two Coat 70% Kynar 500/Hylar 5000, .5 mil two-coat polyester backer.

B. Other Materials:

All other materials, not specifically described, but required for completing the installation as noted in the drawings, shall be first-quality of their respective kinds, new, and as selected by the Contractor, subject to the review of the Engineer.

C. Finish:

1. Texture: panels shall be smooth.
2. Metal preparation: all metal shall have the surfaces carefully prepared for painting on a continuous process coil coating line by alkali cleaning, hot water rinsing, application of chemical conversion coating, cold water rinsing, sealing with an acid rinse, and thorough drying.

3. Prime coating: a base coat of epoxy paint, specifically formulated to interact with the top-coat, shall be applied to the prepared surfaces by roll coating to a dry film thickness of 0.20 ± 0.05 mils. This prime coat shall be oven cured prior to application of finish coat.
4. Exterior coating: a Kynar® 500/Hylar® 5000* finish coating shall be applied over the primer by roll coating to a dry film thickness of 0.80 ± 0.05 mils for a total dry film thickness of 1.00 ± 0.10 . This finish coating shall be oven-cured.
5. Interior coating: a washcoat shall be applied on the reverse side over the primer by roll coating to a dry film thickness of 0.30 ± 0.05 mils for a total dry film thickness of 0.50 ± 0.10 mils. The washcoat shall be oven-cured.
6. Color: the color of the exterior finish shall be as chosen by the Owner from the manufacturer's standard color chart.
7. Physical properties: the coating shall conform to the manufacturer's standard performance criteria as listed by certified test reports for fade, chalk, abrasion, humidity, adhesion, pollution resistance, and others as required and standard within the industry.

2.02 ACCESSORIES:

A. Fasteners:

1. All screws shall be galvanized, or stainless steel. They shall have a combination steel and EPDM washer when exposed.
2. Screws for panel to girt shall be of the type and size of sufficient length to penetrate the supporting member by 1".
3. Screws for flashings and sidelaps shall be #14 HHA x $\frac{3}{4}$ " sheet metal stitch screws. All accessories, flashings, and sidelaps shall be fastened 12" o.c. unless otherwise indicated.

B. Flashings shall be shop-fabricated from material that is the same thickness and finish as the Decor-Flush panels to which they are attached. Where practicable, flashings shall be furnished in maximum 10' lengths. Exposed flashings shall be lapped 6".

C. Caulking shall be a polyurethane where it is exposed and there is no thermal movement. All caulking or sealing shall be done in a neat manner with excess caulking or sealant removed from exposed surfaces.

D. Caulking shall be non-skinning, non-hardening gun grade butyl sealant or butyl sealant tape with a minimum thickness of $\frac{1}{8}$ " where it is concealed and where thermal movement must be accommodated. All caulking or sealing shall be done in a neat manner with excess caulking or sealant removed from exposed surfaces.

2.05 RELATED MATERIALS:

Refer to other sections listed in Related Sections paragraph for related materials.

2.06 FABRICATION:

- A. Panels shall be formed in continuous lengths.
- B. Panels shall to be roll formed on a stationary industrial type rolling mill to gradually shape the sheet metal. Portable rollformers, rented or owned by the installer, are not acceptable.
- C. Fabricate flashings from the same material as the wall system.

2.07 SOURCE QUALITY:

- A. Source Quality: obtain metal panels and accessories from a single manufacturer.
- B. Fabrication Tolerances:
 1. Rib height: $1" \pm \frac{1}{8}"$.
 2. Panel shearing length: $\pm \frac{1}{4}"$ maximum.

- 3. Follow tolerances in MCA's Preformed Metal Wall Guidelines.
- C. Tests and inspections
- D. Verification of performance

PART 3 – EXECUTION

3.01 PROJECT EXAMINATION:

Prior to installation of metal panel system, Contractor shall examine the site all receiving panels.

The installer must examine the existing substrates, and the conditions under which the panels will be installed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the work and performance this panel system.

Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Engineer.

Coordinate work of this section with other trades.

3.03 INSTALLATION:

- A. Conform to the standard set forth in the SMACNA architectural sheet metal manuals and the approved shop drawings detailed for the project.
- B. Install panels plumb, level, and straight with the ribs parallel, conforming to the design as indicated.
- C. Install panel system so it is watertight, without waves, warps, buckles or distortions, and allow for thermal movement considerations.
- D. When installed as wall or fascia, these panels shall be applied vertically.
- E. Abrasive devices shall not be used to cut on or near wall panel system.
- F. Apply sealant tape or caulking as necessary at flashing and panel joints to prevent water penetration.
- G. Remove any strippable film immediately upon exposure to direct sunlight.

3.04 CLEAN UP:

Dispose of excess materials and debris from jobsite. Remove filings, grease, stains, marks, or excess sealants from wall panel system to prevent staining. Protect work from damage from other trades until final acceptance

3.05 WORKMANSHIP:

Remove and replace any area of coating which does not meet the requirements of these Specifications at no additional cost to the Owner.

SECTION 07620

METAL FLASHING, TRIM AND ACCESSORIES

PART 1 – GENERAL

1.01 SECTION INCLUDES:

1. Provide and install new sheet metal flashing, counterflashing, etc. as shown on the Project Drawings and as specified herein. Include supplementary materials and installation accessories required for a complete and proper installation.

1.02 RELATED SECTIONS:

1. Roofing Underlayment (Section 07300).
2. Sealants (Section 07900).

1.03 QUALITY ASSURANCE:

1. References: Some products and execution are specified in this section by reference to published specifications or standards of the following (with respective abbreviations used):
 - A. American Iron and Steel Institute (AISI).
 - B. Federal Specifications (FS).
 - C. The American Society for Testing and Materials (ASTM).
 - D. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
2. Standard References: As published by SMACNA: "Architectural Sheet Metal Manual," Fifth Edition, 1992; hereinafter referred to as "SMACNA Manual." May be obtained from Sheet Metal and Air Conditioning Contractors National Association, Inc.

1.04 SUBMITTALS: (Applicable only to new sheet metal sections)

1. All submittals shall be provided in accordance with Section 01012 and as specified herein.
2. Shop Drawings: (Submit in triplicate)
 - A. Use of Contract Drawings reproduced for Shop Drawings is prohibited.
 - B. Only Shop Drawings checked and stamped "Approved by Contractor and Fabricator" will be acceptable for review.

- C. Show weights, gauges, or thickness of sheet metal. Show location, arrangement, dimensions, materials, fastenings, connections, anchorage, and relation to adjacent work.
 - D. Show terminations, intersections, and splices in isometric details.
3. Samples:
- A. Submit samples (in duplicate) of the following:
 - i. All Flashings (sheet metal only).
 - ii. Fastening Hardware.
 - B. Samples shall be of same material composition, thickness, and dimension as required for construction. Samples shall be a minimum of 12 inches long.

1.05 DELIVERY, STORAGE, AND HANDLING:

- 1. Sheet metal items shall be handled carefully to prevent damage to surface, edges and finish.
- 2. Store at site and above ground in a dry location, free from physical abuse. Store materials in a manner to prevent staining from condensation.

PART 2 – PRODUCTS

2.01 MATERIALS:

- 1. Stainless Steel: Stainless steel flashing material to be AISI Type 304. Minimum thickness of sheet metal to be .024 inches (24 gauge) for all sheet metal drip edge pans, pan flashings and corner flashings:
 - A. Coefficient of expansion – 0.0000096 in./in °F.
 - B. Tensile strength – 80,000 psi (552000 kpa).
- 2. Galvanized Steel: 24 gauge prefinished metal flashings to match standing seam roofing metals.
 - A. Color Finish: Metal shall be thoroughly cleaned and pretreated before applications. Exposed to view surfaces shall be finished with fluorocarbon coating containing a minimum of 70 percent Kynar® 500 resin. Color shall be selected from the manufacturer's standard colors. A 20-year limited warranty against failure of the finish shall begin when the job is complete.

B. Fabricate to configuration indicated on the Drawings.

3. Fasteners:

A. Screws, bolts, rivets, and other fastenings for exposed sheet metal (unless otherwise noted) shall be AISI Type 300 series stainless steel and of size and type suitable for the intended use.

B. Provide sealing washer at all exposed fasteners.

4. Sealant: Sealing and caulking materials shall conform to requirements of Section 07900.

2.02 FABRICATION - SHEET METAL:

1. Sheet metal shall be fabricated in a shop equipped with machinery and tools for working sheet metal. Work shall be performed by skilled mechanics. Fabricate all work possible in shop.
2. Sheet metal shall be formed to profiles, sizes, and dimensions as shown on Project Drawings and as shown on approved shop drawings. Work shall conform to approved samples.
3. Work shall conform to practices recommended in SMACNA Manual, except as required specifically otherwise.
4. Sheet metal shall be installed in longest lengths possible up to a maximum of 10 feet to minimize joints; except where required specifically otherwise, and where consideration of control of expansion and contraction require otherwise.
5. Sheet metal shall be formed to true lines and sharp arises. Work shall be straight, without bulges or waves.
6. Exposed edges shall be turned under to form hem for stiffness unless shown otherwise on Project Drawings. No exposed, sheared, or raw edges shall be permitted. Rounded, smooth corners are required where sheet metal may puncture or damage any adjacent material. Provide drip edge on all vertical faces of sheet metal to shed water away from underlying materials.
7. Corners of stainless steel sheet metal shall be mitered, seamed, and welded watertight. Legs shall be not less than 2 feet long unless otherwise shown on Project Drawings. Form and fabricate in shop.
8. Work shall have concealed fasteners wherever possible. Cleats or other devices shall allow movement of metal work.

9. Flat seams shall be spliced as detailed on the drawings. Allow sufficient space between butted joints 1/8 inch – 1/4 inch to accommodate expansion/contraction. Do not butt tightly.

PART 3 – EXECUTION

- 3.01 EXAMINATION OF SUBSTRATE: Substrate shall be suitable to receive work of this section. Work shall not commence until unsuitable conditions of substrate have been corrected.

- 3.02 GENERAL REQUIREMENTS FOR INSTALLATION:

1. Work shall be installed by skilled mechanics.
2. Work shall conform to approved shop drawings, approved samples, and requirements herein. Work shall conform to SMACNA Manual except where required otherwise in Contract Documents.
3. Work shall allow for thermal movement in relationship to adjacent materials while remaining functional and watertight.
4. Completely isolate dissimilar metals from each other.
5. Seal all laps. See splice details on the drawings.
6. Metal Flashings:
 - A. Install at locations shown on drawings, using the profile, shape and gage specified to form a continuous watertight barrier.
 - B. Prior to fabricating flashing, field measure any existing conditions which will have an impact on the length or the width. Fabricate flashing to suit the as-built dimension.
 - C. Install flashing, edges, and trims, in a continuous section as long as possible. Lap and seal all splices as shown in the Contract Documents.
 - D. Lap and seal flashing below all vertical expansion joints in the facade to allow for anticipated movement. See details in the Project Drawings.
 - E. All flashing shall form a continuous watertight barrier.
 - F. Bend up flashings where shown in the drawings to create end dams at all terminations, weld seams or seal as shown in the drawings. Where shown, provide a continuous lap of self-adhering flexible flashing or underlayment over

metals. Corners of flexible membrane shall be formed of flexible flashing membrane material, folded and sealed.

G. Work shall conform to the latest edition of the requirements of SMACNA.

- 3.03 FLASHINGS: Install flashing sections as specified herein, as shown on Project Drawings and in accordance with approved shop drawings.
- 3.04 SEALING: Seal joints between sheet metal work and adjacent work as necessary to provide resilient, watertight condition. Work of this section shall be watertight.
- 3.05 CLEANING: After completion of installation of work of this section, exposed work shall be cleaned thoroughly of all scraps, stains, flux, weld splatter, oil, and other materials which would damage work.
- 3.06 WORKMANSHIP:
1. Work of this section shall provide leak-free protection for the facade system and interior.
 2. Work of this section which does not conform to specified requirements, shall be corrected and/or replaced as directed by the Engineer, at Contractor's expense, without extension of time. Contractor shall also be responsible for cost of corrections to any work affected by or resulting from correction to work of this section.

SECTION 07900

SEALANTS AND CAULKING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

Drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 of Specifications, apply to work of this section.

1.02 SECTION INCLUDES:

Furnish and install sealants, primers, backer rods, bond-breaker tape and other accessories for all joints where shown on the drawings and elsewhere as required to provide a positive barrier against passage of air and moisture.

1.03 QUALITY ASSURANCE:

A. References:

Some products and execution are specified in this section by reference to published specifications or standards of the following (latest edition, with respective abbreviations used):

The American Society for Testing and Materials	(ASTM)
American National Standards Institute	(ANSI)
Sealants, Waterproofing, and Restoration Institute	(SWRI)

B. Codes and Standards:

Current edition of the following standard references shall apply to the work of this section except as indicated otherwise on the drawings or as specified herein:

ASTM C920	Standard Specification for Elastomeric Joint Sealants
ASTM C962	Standard Guide for Use of Elastomeric Joint Sealants
ACI 504	Guide to Joint Sealants in Concrete

1.04 SUBMITTALS:

A. Installation Instructions:

Submit (in triplicate) copies of manufacturer's printed instructions for installation of sealants specified.

B. Manufacturer's Data:

A complete materials list showing all items proposed to be furnished and installed under this section.

Sufficient data to demonstrate that all such materials meet or exceed the specified requirements. Manufacturer shall stipulate that sealant materials are suitable for use with

building materials and job conditions as indicated by drawings. Data shall show test results of the physical properties of the sealant material.

Specifications, installation instructions, and general recommendations from the materials manufacturers showing procedures under which it is proposed that the materials will be installed. Such conditions as joint width expansion and contraction, adhesion, sealant depth, and other conditions affecting sealant installation shall be considered. Upon approval by the Engineer, the proposed installation procedures will become the basis for inspecting and accepting or rejecting actual installation procedures used on the work.

Submit data regarding the joint design, bringing to the Engineer's attention any conditions shown on the drawings under which the specified material cannot be satisfactorily installed.

Submit manufacturer's printed instructions for surface preparation, installation, and curing of each type of application required and specified or shown on the Contract Documents.

C. Samples:

Submit samples of sealant to show color. Submit samples of full range of manufacturer's standard colors.

D. Guaranty-Warranty:

The Contractor shall supply the Owner with a minimum ten (10) year workmanship warranty. Any work related to the installation of sealant materials or work found to be defective and not in accordance with the contract documents within ten years of substantial completion, the Contractor shall remove and replace at no cost to the Owner. Warranty shall state that work complies with requirements of Contract Documents, the airtightness and watertightness of the joints, moisture resistance, adhesion or cohesion failure of the joints, abrasion resistance, rupture of the sealant, and general durability. The obligation of this warranty shall run directly to the Owner with a copy to the sealant manufacturer.

Submit (in duplicate) guaranty-warranty on products and execution of sealant work on exterior required by this section. Guaranty-Warranty for workmanship shall be submitted on applicator's company letterhead, and shall be signed by an officer of the company. Guaranty-Warranty for the sealant materials shall be submitted on the manufacturer's letterhead, and shall be signed by an officer of the company.

1.05 QUALIFICATIONS:

A. Manufacturers:

Source: Products for use on this project shall be of the listed manufacturer unless noted specifically otherwise herein. Products meeting the performance criteria of these Specifications that are manufactured by other manufacturers will be evaluated by the Engineer provided the manufacturer can demonstrate by tests that the sealants, when used with the materials on this project, will meet all the physical and performance criteria of these Specifications.

B. Applicators:

Submit letter from manufacturer of sealant materials stating that applicator is approved by the manufacturer and SWRI for application of the materials specified for the project. Letter shall certify that the applicator has satisfactorily applied the types of materials specified on projects which have been completed for at least five (5) years. Letter shall be on manufacturer's letterhead and shall be signed by an officer of the company.

1.06 PRODUCT HANDLING:

A. Delivery and Storage:

Deliver all materials of this section to the job site in the original unopened containers with all labels intact and legible at time of use. Storage only under conditions recommended by the manufacturer. Do not retain on the job site any material which has exceeded the shelf life recommended by its manufacturer.

B. Protection:

Use all means necessary to protect the materials of this section before, during, and after installation and to protect the work and materials of all other trades.

C. Replacements:

In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer at no additional cost to the Owner.

1.07 JOB CONDITIONS:

A. Environmental Conditions:

Do not apply material if it is raining or snowing or if either condition appears to be imminent. Apply and install only at temperatures recommended in writing by the manufacturer of the sealants.

B. Protection:

Precautions shall be taken to avoid damage to any surface near the work due to mixing and handling of the sealant.

PART 2 – PRODUCTS

2.01 MATERIALS:

A. Silicone-Based Sealant Compounds:

Shall be one of the following;

795 Silicone by Dow Corning Corporation, Midland, Michigan
Silpruf Silicone by General Electric Silicones, Waterford, NY
890 Silicone by Pecora Corporation, Harleysville, PA
or other approved sealant

- B. Single Component Polyurethane-Based Sealant Compounds:
Shall be one of the following or approved equal:
MasterSeal NP-1 by BASF
SikaFlex 1A by Sika Corporation
SikaFlex 15 LM by Sika Corporation
- C. Two- Component Polyurethane-Based Sealant Compounds:
Shall be one of the following or approved equal:
MasterSeal NP-2 by BASF
SikaFlex 2C NS by Sika Corporation
- D. Primer:
Provide primer where noted on the drawings and at all joints to receive a sealant. The type of primer shall be as recommended by the manufacturer of the sealant.
- E. Backer Rod for Joint Filler:
Provide closed cell polyethylene foam as recommended by sealant material manufacturer for compatibility with material. Open cell products are not acceptable. Provide size and shape of rod to control depth of sealant and to provide a minimum of 25% compression upon insertion.
- F. Bond-Breaker Tape:
11-mil low-density polyethylene tape with a rubber pressure-sensitive side.
- G. Other Materials:
All other materials, not specifically described, but required for complete and proper caulking and installation of sealants or as indicated on the drawings, shall be first-quality of their respective kinds, new, and as selected by the Contractor, subject to the review of the Engineer.

PART 3 – EXECUTION

3.01 PROJECT EXAMINATION:

Prior to application of any joint sealant, Contractor shall examine the site and all joints to be sealed.

The installer must examine the joint surfaces, backing, and anchorage of units forming sealant rabbets, and the condition under which the sealant work is to be performed, and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work and performance of the sealants.

Material in contact with sealants shall be dry, fully cured, and free of laitance, form-release agents, curing compounds, water repellants, and other surface treatments that will be detrimental to the adhesion of the sealant.

Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Engineer.

Coordinate work of this section with other trades.

3.02 JOINTS:

Joint tolerances and design shall be as shown on the details. Where joint dimensions and tolerances recommended by the sealant manufacturer are more restrictive than those specified herein, or shown on the details, they shall be submitted to the Engineer for review prior to installation.

Joint widths are shown on the details. Where joint width varies, correct as directed by the Engineer to conform to the requirements shown on the drawings or specified herein.

Where joint depth exceeds that specified herein, fill with material specified for the particular compound to provide proper depth.

3.03 LOCATION OF SEALANTS:

Seal all joints at new and existing joints as indicated on the drawings and specified herein to provide a complete watertight and airtight installation.

3.04 PREPARATORY WORK:

A. All existing sealants and backing material shall be removed from the existing joints all around the building as indicated on the drawings. Remove all residue left by existing sealants. All surfaces to receive the new sealant shall be dry, sound, and free of dust, dirt, sealant residue or any other contaminants which would inhibit the bond or performance of the new sealants. Clean joints with compressed air. Use solvent to remove oil and grease, using a clean rag to wipe the surface after contaminants have been removed. All surface preparation shall be completed in accordance with this Specification and the material manufacturer's written instructions. Where backup materials are used, insert the approved backup materials using a gauge tool to set the backup material to the proper depth. The depth of the sealant shall be maintained consistently throughout the project as indicated on the drawings. Any joint not complying with the Specifications in regard to size, depth of backup materials, surface cleanliness and preparation, etc. shall not be accepted for installation of sealants. Contractor shall remedy all such conditions noted at no additional cost to the Owner.

3.05 PRIMING:

In addition to the specified surface-preparation steps, all surfaces shall receive a primer prior to the application of the sealant. If, in the opinion of the sealant manufacturer, surfaces are weak or contaminated, he shall recommend to the Engineer measures that will insure the bond and performance of the sealant.

Primers must be applied in the following steps (before installation of the backer rod and sealant):

1. Primers cannot be removed by solvents; therefore, surfaces adjacent to all joints shall be masked or taped.
2. Pour primer only into clean container. Do not pour more than a ten-minute supply into the container.
3. On non-porous surfaces, dip a clean, dry, lint-free cloth into the primer and gently wipe a thin film onto the surface. For porous surface, apply the primer with a clean brush.
4. Apply primer in a thin layer to avoid forming a white film on the surface. Where the primer is applied too thick and a white film appears, wipe clean with a dry, lint-free cloth.
5. Allow primer to dry. Surfaces shall be sealed the same day that they are primed.

3.06 INSTALLATION OF JOINT FILLER:

Joints where a backup is required shall be packed with a properly sized joint-filler rod to yield a joint of the required depth.

Install a bond-breaker strip of polyethylene tape at back of joints, where shown on the Details, to prevent bond of caulking or sealant compound to back of joint. Bond-breaker strips shall be securely attached to the surface.

Use only the backup material and filler recommended by the manufacturer of the sealant and approved by the Engineer for the particular installation. When compressing the backup of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock. Where backup material is required, set backup material to the required depth with a gage.

3.07 INSTALLATION SEALANT:

Install all sealants in strict accordance with manufacturer's printed instructions. It is critical that the sealant completely fills the entire joint and firmly contacts or "wets" all substrate surfaces.

Apply sealant compound with gun having proper size nozzle.

Use sufficient pressure to fill all voids and joints solid to the depth specified and then engage the compound and "wet" all sides of joint. A superficial skin or fillet bead will not be acceptable. Fillet beads of the size and shape detailed on the drawings are required and acceptable at those locations.

Remove excess compound and leave surfaces neat, smooth, and clean. Joints shall be even and uniform in appearance and shall be watertight. Tool surface to produce good contact, to increase density, and to improve appearance. Use masking tape to insure a neat appearance. Mask only the protected area and remove tape before sealant begins to cure.

Apply sealant compound in a continuous operation, horizontally in one direction and vertically from the bottom to the top.

At completion, all sealed or caulked surfaces shall present a neat appearance and all surrounding surfaces shall be left in a clean condition.

Cure sealant materials in accordance with manufacturer's printed instructions to obtain high early bond strength, internal cohesive strength, and surface durability.

3.08 FIELD ADHESIVE TEST:

At exposed sealant locations, the Contractor shall perform two field adhesion tests in areas representing work during which each day's sealants are installed to detect field problems such as inadequate cleaning, improper primer, poor applications, or other field problems that affect adhesion. The Engineer may perform tests on the site at random locations after the sealant has fully cured (usually 14 to 21 days).

Repair of sealant in adhesion test area: Sealant shall be replaced in test area by applying more sealant in the same manner it was originally installed. Care should be taken to assure that the new sealant is in contact with the original and the original sealant surfaces are clean so that good bond between the new and old sealant will be obtained. Repairs shall be completed by the Contractor at no additional cost.

3.09 CLEAN UP:

Upon completion of work, remove all boxes, cartridges, and other debris. Clean sealant spillage from all adjacent surfaces.

3.10 WORKMANSHIP:

Remove and replace any sealant joint that does not meet the requirements of these Specifications at no additional cost to the Owner.

SECTION 08500

INSULATED TRANSLUCENT FIBERGLASS SANDWICH PANEL WINDOW REPLACEMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the insulated translucent sandwich panel system and accessories as shown and specified. Panel shall be installed as clerestory window replacements in not conditioned spaces over entrance. Work includes providing and installing:
 - 1. Flat factory prefabricated structural insulated translucent sandwich panels
 - 2. Aluminum installation system
 - 3. Aluminum sill flashing

1.2 SUBMITTALS

- A. Submit manufacturer's product data. Include construction details, material descriptions, profiles and finishes of components.
- B. Submit shop drawings. Include elevations and details.
- C. Submit manufacturer's color charts showing the full range of colors available for factory-finished aluminum.
 - 1. Submit samples for each exposed finish required, in same thickness and material indicated for the work and in size indicated below. If finishes involve normal color variations, include sample sets consisting of two or more units showing the full range of variations expected.
 - a. Sandwich panels: 14" x 28" units
 - b. Factory finished aluminum: 12" long sections
- D. Submit one each 12"x12" sample of sandwich panel in with interior and exterior face in the following colors:
 - a. white
 - b. crystal
- E. Submit Installer Certificate, signed by installer, certifying compliance with project qualification requirements.
- F. Submit product reports from a qualified independent testing agency indicating each type and class of panel system complies with the project performance requirements, based on comprehensive testing of current products. Previously completed reports will be acceptable if for current manufacturer and indicative of products used on this project.

1. Reports required are:

- a. International Building Code Evaluation Report
- b. Flame Spread and Smoke Developed (UL 723) – Submit UL Card
- c. Burn Extent (ASTM D 635)
- d. Color Difference (ASTM D 2244)
- e. Impact Strength (UL 972)
- f. Bond Tensile Strength (ASTM C 297 after aging by ASTM D 1037)
- g. Bond Shear Strength (ASTM D 1002)
- h. Beam Bending Strength (ASTM E 72)
- i. Insulation U-Factor (NFRC 100)
- j. NFRC System U-Factor Certification (NFRC 700)
- k. Solar Heat Gain Coefficient (NFRC or Calculations)
- l. Condensation Resistance Factor (AAMA 1503)
- m. Air Leakage (ASTM E 283)
- n. Structural Performance (ASTM E 330)
- o. Water Penetration (ASTM E 331)
- p. 1200°F Fire Resistance (SWRI)
- q. LEED Credits
- r. Daylight Autonomy

1.3 QUALITY ASSURANCE

A. Manufacturer's Qualifications

1. Material and products shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least ten consecutive years and which can show evidence of those materials being satisfactorily used on at least six projects of similar size, scope and location. At least three of the projects shall have been in successful use for ten years or longer.
2. Panel system must be listed by an ANSI accredited Evaluation Service, which requires quality control inspections and fire, structural and water infiltration testing of sandwich panel systems by an accredited agency.
3. Quality control inspections shall be conducted at least once each year and shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with AC177 "Translucent Fiberglass Reinforced Plastic (FRP) Faced Panel Wall, Roof and Skylight Systems" as issued by the ICC-ES.

- B. Installer's Qualifications: Installation shall be by an experienced installer, which has been in the business of installing specified panel systems for at least two consecutive years and can show evidence of satisfactory completion of projects of similar size, scope and type.

1.4 PERFORMANCE REQUIREMENTS

- A. The manufacturer shall be responsible for the configuration and fabrication of the complete panel system.
 - 1. Include structural analysis data signed and sealed by the qualified professional engineer licensed in the state of North Carolina
 - 2. Standard panel system shall have less than 0.01 cfm/ft² air leakage by ASTM E 283 at 6.24 PSF (50 mph) and no water penetration by ASTM E 331 at 15 PSF; and structural testing by ASTM E 330.
 - 3. Structural Loads; Provide system capable of handling the following loads:
 - a. Positive Wind Load: 35 PSF
 - b. Negative Wind Load: 35 PSF

1.5 DELIVERY STORAGE AND HANDLING

- A. Deliver panel system, components and materials in manufacturer's standard protective packaging.
- B. Store panels on the long edge; several inches above the ground, blocked and under cover in accordance with manufacturer's storage and handling instructions.

1.6 WARRANTY

- A. Submit manufacturer's and installer's written warranty agreeing to repair or replace panel system work, which fails in materials or workmanship within five years of the date of Final Acceptance. Failure of materials or workmanship shall include leakage, excessive deflection, deterioration of finish on metal in excess of normal weathering, defects in accessories, insulated translucent sandwich panels and other components of the work.
- B. Base Bid Warranties:
 - 1. 5 year material and workmanship warranty.
 - 2. 10 year warranty covering separation of faces from grid core and/or abnormal color change of the exterior face.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

- A. Kalwall Corporation, Manchester NH (www.kalwall.com)
- B. Major Industries, Wausau, WI (www.majorskylights.com)
- C. Kingspan Light + Air LLC, Lake Forest, IL (www.kingspan.com)

2.2 PANEL COMPONENTS

- A. Face Sheets

1. Translucent faces: Manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.
 - a. Thermoplastic (e.g. polycarbonate, acrylic) faces are not acceptable.
 - b. Face sheets shall not deform, deflect or drip when subjected to fire or flame.
2. Exterior face sheets on both sides of panel:
 - a. Flame spread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flame spread rating no greater than 25 and smoke developed no greater than 250 when tested in accordance with UL 723.
 - b. Burn extent by ASTM D 635 shall be no greater than 1".
 - c. Color stability: Full thickness of the exterior face sheet shall not change color more than 3 CIE Units DELTA E by ASTM D 2244 after 5 years outdoor South Florida weathering at 5° facing south, determined by the average of at least three white samples with and without a protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.
 - d. Strength: Exterior face sheet shall be uniform in strength, impenetrable by hand held pencil and repel an impact minimum of 70 ft. lbs. without fracture or tear when impacted by a 3-1/4" diameter, 5 lb. free-falling ball per UL 972.
3. Appearance:
 - a. Exterior face sheet 1: Smooth .070" thick and crystal or white in color.
 - b. Exterior face sheet 2: Smooth .070" thick and crystal or white in color.
 - c. Face sheets shall not vary more than $\pm 10\%$ in thickness and be uniform in color.
 - d. Final color selection by owner based upon submitted physical samples

B. Grid Core

1. Aluminum I-beam grid core shall be of 6063-T6 or 6005-T5 alloy and temper with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I-beam shall be no less than 7/16".
2. I-beam Thermal break: Minimum 1", thermoset fiberglass composite.

C. Laminate Adhesive

1. Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council "Acceptance Criteria for Sandwich Panel Adhesives".
2. Minimum tensile strength of 750 PSI when the panel assembly is tested by ASTM C 297 after two exposures to six cycles each of the aging conditions prescribed by ASTM D 1037.
3. Minimum shear strength of the panel adhesive by ASTM D 1002 after exposure to four separate conditions:
 - a. 50% Relative Humidity at 68° F: 540 PSI
 - b. 182° F: 100 PSI

- c. Accelerated Aging by ASTM D 1037 at room temperature: 800 PSI
- d. Accelerated Aging by ASTM D 1037 at 182° F: 250 PSI

2.3 PANEL CONSTRUCTION

- A. Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge.
 - 1. Thickness: 2-3/4"
 - 2. Light transmission: 16% minimum
 - 3. Solar heat gain coefficient .25 minimum
 - 4. Grid pattern: as shown on drawings
- B. Standard panels shall deflect no more than 1.9" at 30 PSF in 10' 0" span without a supporting frame by ASTM E 72.
- C. Standard panels shall withstand 1200° F fire for minimum one hour without collapse or exterior flaming.
- D. Thermally broken panels: Minimum Condensation Resistance Factor of 80 by AAMA 1503 measured on the bond line.

2.4 BATTENS AND PERIMETER CLOSURE SYSTEM

- A. Closure system: Standard extruded aluminum 6063-T6 and 6063-T5 alloy and temper clamp-tite screw type closure system.
- B. Sealing tape: Manufacturer's standard, pre-applied to closure system at the factory under controlled conditions.
- C. Fasteners: 300 series stainless steel screws for aluminum closures, excluding final fasteners to the building.
- D. Finish:
 - 1. Manufacturer's factory applied finish, which meets the performance requirements of AAMA 2604. Color to be aluminum (selected from manufacturer's standards).
 - 2. Anodized clear

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Installer shall examine substrates, supporting structure and installation conditions.
- B. Do not proceed with panel installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete, masonry or pressure treated wood, protect against corrosion by painting contact surfaces with bituminous paint or method recommended by manufacturer.

3.3 INSTALLATION

A. Install the panel system in accordance with the manufacturer's suggested installation recommendations and approved shop drawings.

1. Anchor component parts securely in place by permanent mechanical attachment system.
2. Accommodate thermal and mechanical movements.
3. Set perimeter framing in a full bed of sealant compound, or with joint fillers or gaskets to provide weather-tight construction.

B. Install joint sealants at perimeter joints and within the panel system in accordance with manufacturer's installation instructions.

3.4 CLEANING

A. Clean the panel system interior and exterior, immediately after installation.

B. Refer to manufacturer's written recommendations.

END OF SECTION 08500

SECTION 08600

INSULATED TRANSLUCENT FIBERGLASS SANDWICH PANEL SKYLIGHT SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the insulated translucent sandwich panel skylight system and accessories as shown and specified. Work includes providing and installing:
 - 1. Flat factory prefabricated structural insulated translucent sandwich panels
 - 2. Aluminum installation system
 - 3. Aluminum flashing attached to skylights
- B. Related Sections:
 - 1. Roofing: Section 07300
 - 2. Flashing and Sheet Metal: Section 07620
 - 3. Sealants: Section 07900

1.2 SUBMITTALS

- A. Submit manufacturer's product data. Include construction details, material descriptions, profiles and finishes of skylight components.
- B. Submit shop drawings. Include elevations and details.
- C. Submit manufacturer's color charts showing the full range of colors available for factory-finished aluminum.
 - 1. When requested, submit samples for each exposed finish required, in same thickness and material indicated for the work and in size indicated below. If finishes involve normal color variations, include sample sets consisting of two or more units showing the full range of variations expected.
 - a. Sandwich panels: 14" x 28" units
 - b. Factory finished aluminum: 5" long sections
- D. Submit one each 12"x12" sample of sandwich panel in with interior and exterior face in the following colors:
 - a. white
 - b. crystal
- E. Submit Installer Certificate, signed by installer, certifying compliance with project qualification requirements.
- F. Submit product reports from a qualified independent testing agency indicating each type and class of panel system complies with the project performance requirements, based on comprehensive testing of current products. Previously completed reports will be acceptable if for current manufacturer and indicative of products used on this project.
 - 1. Reports required are:

- a. International Building Code Evaluation Report
- b. Flame Spread and Smoke Developed (UL 723) – Submit UL Card
- c. Burn Extent (ASTM D 635)
- d. Color Difference (ASTM D 2244)
- e. Impact Strength (UL 972)
- f. Bond Tensile Strength (ASTM C 297 after aging by ASTM D 1037)
- g. Bond Shear Strength (ASTM D 1002)
- h. Beam Bending Strength (ASTM E 72)
- i. Fall Through Resistance (ASTM E 661)
- j. Insulation U-Factor (NFRC 100)
- k. NFRC System U-Factor Certification (NFRC 700)
- l. Solar Heat Gain Coefficient (NFRC or Calculations)
- m. Condensation Resistance Factor (AAMA 1503)
- n. Air Leakage (ASTM E 283)
- o. Structural Performance (ASTM E 330)
- p. Water Penetration (ASTM E 331)
- q. Class A Roof Covering Burning Brand (ASTM E 108)
- r. UL Listed Class A Roof System (UL 790) (Optional) – Submit UL Card
- s. LEED Credits
- t. Daylight Autonomy

1.3 QUALITY ASSURANCE

A. Manufacturer's Qualifications

- 1. Material and products shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least ten consecutive years and which can show evidence of those materials being satisfactorily used on at least six projects of similar size, scope and location. At least three of the projects shall have been in successful use for ten years or longer.
- 2. Panel system must be listed by an ANSI accredited Evaluation Service, which requires quality control inspections and fire, structural and water infiltration testing of sandwich panel systems by an accredited agency.
- 3. Quality control inspections shall be conducted at least once each year and shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with AC177 "Translucent Fiberglass Reinforced Plastic (FRP) Faced Panel Wall, Roof and Skylight Systems" as issued by the ICC-ES.

- B. Installer's Qualifications: Installation shall be by an experienced installer, which has been in the business of installing specified skylight systems for at least two consecutive years and can show evidence of satisfactory completion of projects of similar size, scope and type.

1.4 PERFORMANCE REQUIREMENTS

- A. The manufacturer shall be responsible for the configuration and fabrication of the complete skylight panel system.

- 1. When requested, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- 2. Standard skylight system shall have less than 0.01 cfm/ft² air leakage by ASTM E 283 at 6.24 PSF (50 mph) and no water penetration by ASTM E 331 at 15 PSF; and structural testing by ASTM E 330.
- 3. Structural Loads; Provide skylight system capable of handling the following loads:

- a. Live Load: 20 PSF
- b. Snow Load: 15 PSF
- c. Wind Load: Ultimate Wind Speed 115 (ASCE - 7) exposure category B

1.5 DELIVERY STORAGE AND HANDLING

- A. Deliver panel system, components and materials in manufacturer's standard protective packaging.
- B. Store panels on the long edge; several inches above the ground, blocked and under cover in accordance with manufacturer's storage and handling instructions.

1.6 WARRANTY

- A. Submit manufacturer's and installer's written warranty agreeing to repair or replace panel system work, which fails in materials or workmanship within five years of the date of Final Acceptance. Failure of materials or workmanship shall include leakage, excessive deflection, deterioration of finish on metal in excess of normal weathering, defects in accessories, insulated translucent sandwich panels and other components of the work.
- B. Base Bid Warranties:
 - 1. 5 year material and workmanship warranty.
 - 2. 10 year warranty covering separation of faces from grid core and/or abnormal color change of the exterior face.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

- A. Kalwall Corporation, Manchester NH (www.kalwall.com)
- B. Major Industries, Wausau, WI (www.majorskylights.com)
- C. Kingspan Light + Air LLC, Lake Forest, IL (www.kingspan.com)

2.2 PANEL COMPONENTS

A. Face Sheets

- 1. Translucent faces: Manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.
 - a. Thermoplastic (e.g. polycarbonate, acrylic) faces are not acceptable.
 - b. Face sheets shall not deform, deflect or drip when subjected to fire or flame.
- 2. Interior face sheets:
 - a. Flame spread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flame spread rating no greater than 25 and smoke developed no greater than 250 when tested in accordance with UL 723.
 - b. Burn extent by ASTM D 635 shall be no greater than 1".
- 3. Exterior face sheets:
 - a. Color stability: Full thickness of the exterior face sheet shall not change color more than 3 CIE Units DELTA E by ASTM D 2244 after 5 years outdoor South Florida weathering at 5° facing south, determined by the average of at least three white samples with and without a

protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.

- b. Strength: Exterior face sheet shall be uniform in strength, impenetrable by hand held pencil and repel an impact minimum of 70 ft. lbs. without fracture or tear when impacted by a 3-1/4" diameter, 5 lb. free-falling ball per UL 972.

4. Appearance:

- a. Exterior face sheets: Smooth, .070" thick and crystal or white in color.
- b. Interior face sheets: Smooth, .070" thick and crystal or white in color.
- c. Face sheets shall not vary more than $\pm 10\%$ in thickness and be uniform in color.
- d. Final color selection by owner based upon submitted physical samples

B. Grid Core

- 1. Standard I-beam grid core shall be of 6063-T6 or 6005-T5 alloy and temper with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I-beam shall be no less than 7/16".
- 2. I-beam Thermal break: Minimum 1", thermoset fiberglass composite.

C. Laminate Adhesive

- 1. Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council "Acceptance Criteria for Sandwich Panel Adhesives".
- 2. Minimum tensile strength of 750 PSI when the panel assembly is tested by ASTM C 297 after two exposures to six cycles each of the aging conditions prescribed by ASTM D 1037.
- 3. Minimum shear strength of the panel adhesive by ASTM D 1002 after exposure to four separate conditions:
 - a. 50% Relative Humidity at 68° F: 540 PSI
 - b. 182° F: 100 PSI
 - c. Accelerated Aging by ASTM D 1037 at room temperature: 800 PSI
 - d. Accelerated Aging by ASTM D 1037 at 182° F: 250 PSI

2.3 PANEL CONSTRUCTION

- A. Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge.
 - 1. Thickness: 2-3/4"
 - 2. Light transmission: 16 % minimum
 - 3. Solar heat gain coefficient .25 minimum
 - 4. Grid pattern: Nominal size as shown on drawings
- B. Standard panels shall deflect no more than 1.9" at 30 PSF in 10' 0" span without a supporting frame by ASTM E 72.
- C. Standard panels shall withstand 1200° F fire for minimum one hour without collapse or exterior flaming.

- D. Thermally broken panels: Minimum Condensation Resistance Factor of 80 by AAMA 1503 measured on the bond line.
- E. Skylight System:
 - 1. Skylight system shall pass Class A Roof Burning Brand Test By ASTM E 108.
 - 2. (Optional) Skylight system shall be UL listed as a Class A Roof by UL 790, which requires periodic unannounced inspections and retesting by Underwriters Laboratories.
- F. Skylight System shall meet the fall through requirements of OSHA 1910.23 as demonstrated by testing in accordance with ASTM E661, thereby not requiring supplemental screens or railings.

2.4 BATTENS AND PERIMETER CLOSURE SYSTEM

- A. Closure system:
 - 1. Extruded aluminum 6063-T6 and 6063-T5 alloy and temper clamp-tite screw type closure system.
 - 2. Curved closure system may be roll formed.
 - 3. Skylight perimeter closures at curbs shall be factory sealed to panels.
- B. Sealing tape: Manufacturer's standard, pre-applied to closure system at the factory under controlled conditions.
- C. Fasteners: 300 series stainless steel screws for aluminum closures, excluding final fasteners to the building.
- D. Finish:
 - 1. Manufacturer's factory applied finish, which meets the performance requirements of AAMA 2604. Color to be aluminum (selected from manufacturer's standards).
 - 2. Anodized clear

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Installer shall examine substrates, supporting structure and installation conditions.
- B. Do not proceed with panel installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Metal Protection:
 - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
 - 2. Where aluminum will contact concrete, masonry or pressure treated wood, protect against corrosion by painting contact surfaces with bituminous paint or method recommended by manufacturer.

3.3 INSTALLATION

- A. Install the skylight system in accordance with the manufacturer's suggested installation recommendations and approved shop drawings.
 - 1. Anchor component parts securely in place by permanent mechanical attachment system.
 - 2. Accommodate thermal and mechanical movements.
 - 3. Set perimeter framing in a full bed of sealant compound, or with joint fillers or gaskets to provide weather-tight construction.
- B. Install joint sealants at perimeter joints and within the panel system in accordance with manufacturer's installation instructions.

3.4 FIELD QUALITY CONTROL

- A. Water Test: Installer to test skylights according to procedures in AAMA 501.2.
- B. Repair or replace work that does not pass testing or that is damaged by testing and retest work.

3.5 CLEANING

- A. Clean the skylight system interior and exterior, immediately after installation.
- B. Refer to manufacturer's written recommendations.

END OF SECTION 08600

SECTION 09900 - PAINTING

PART 1 - GENERAL

1.01 WORK INCLUDED:

1. Furnish all materials, labor and equipment to provide painting of the following as designated on the Drawings:
 - A. Prime paint new interior trim and wall board at areas of balcony door replacement.
 - B. Spot clean and prime corroded areas of existing light gage metal members including, but not limited to, vertical studs, and horizontal channels/tracks.
 - C. Clean and prime exposed steel sections at locations shown on the Drawings.

1.02 DEFINITIONS: "Paint" (as used in this section) means all coating systems and materials (including primers, emulsions, enamels, sealers, fillers and other materials) used as prime, intermediate and finish coats.

1.03 SUBMITTALS:

1. List of Materials:
 - A. Submit list of all materials proposed for use for work of this section, including manufacturer's name, brand name, and catalog number.
2. Submit manufacturer's printed product data on each material proposed for use for work of this section. Product data shall state technical, physical and performance data; recommended sealers and prime coats; recommended intermediate and finish coats; recommended dry-film thickness per coat; solids by volume; and coverage per gallon per thickness (dry film).
3. Submit manufacturer's printed instructions for surface preparation, cleaning, application, and drying time for products for use in work of this section.
4. Samples:
 - A. Contractor shall submit a set of color selection chips for Owner's use in selecting colors where existing color match is not required.
 - B. Contractor shall submit samples of paints, stains and other finishes on like substrate for Owner's approval of colors.
 - C. Before any work is performed at the site, Owner will furnish Contractor with approved colors from color chips submitted.

1.04 DELIVERY, STORAGE AND HANDLING:

1. Materials shall be delivered to project site in manufacturer's original sealed packages, with labels intact and legible, and with seals unbroken.
2. Protect walls, equipment and other building surfaces from paint and from damage. Remove any splatter or spillage.

1.05 ENVIRONMENTAL CONDITIONS:

1. No work shall be performed under conditions which are unsuitable for production of good results.
2. Do not apply paint when temperatures of substrates or of ambient air are below 50°F or when surface temperatures exceed 120°F.
3. Do not apply paint in space where dust is being generated that would speck finish or apply paint on exterior in damp, rainy weather. Do not paint when relative humidity is above 90%.

1.06 PROTECTION:

1. Provide ample protection for and take particular care to protect adjoining surfaces, equipment, hardware, fixtures and materials of all kinds.
2. Scaffolding and staging required for the proper execution of the work shall be erected, maintained, and removed by the Contractor in a safe and careful manner using ladders or metal staging as required. Extreme care shall be taken in fastening, bracing, and handling the staging or scaffolding to avoid scratching or damaging interior walls, windows, floors, furnishings or exterior walls, gutters, downspouts, roof surfaces or equipment, etc.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS/BASIS OF DESIGN:

1. Approved Manufacturer: Except as specified otherwise, brand name products shall be provided to meet the requirements of this specification. Any given product references herein are intended as the basis-of-design, upon which, equal products by other manufacturers are acceptable.

2.02 MATERIALS:

Refer to Specification Section 05500 for finish requirements at exhaust fan maintenance platforms.

1. Prime Paint on Steel (signage curbs, frames, and "North American" Entrance Letters):
Epoxy based primer equal to "Macropoxy 646" as manufactured by Sherwin Williams.
2. Paint on Steel (signage curbs, frames, and "North American" Entrance Letters): Equal to
"Industrial Enamel B54 Series" as manufactured by Sherwin Williams.
3. Stain on Wood Fascia: Semi-Transparent, deep penetrating, oil-based or acrylic stain with
to suit best color match and including the following properties:
 - A. Oil-Based
 - § Pigment Type: Titanium dioxide, iron dioxide pigments, light fast organic pigment, silicates
 - § Vehicle Type, Refined Linseed Oil
 - § Solvent, Aliphatic petroleum distillates
 - § Gloss, 0-10 Units @ 60°
 - § Viscosity 26-56 Unit Centipoise
 - § Solids Weight: 40% minimum
 - § Solids Volume: 32% minimum
 - § Pigment Weight: 5.7%
 - B. Acrylic
 - § Pigment Type: Titanium dioxide
 - § Vehicle Type: Acrylic Resin
 - § Viscosity: 62-68 Krebs Units
 - § VOC Content: < 100 g/L
 - § Solids Weight: 32% minimum
 - § Solids Volume: 26% minimum

PART 3 - EXECUTION

3.01 INSPECTION:

1. Contractor must examine areas and conditions under which painting and staining work is to be applied and notify Owner's Representative in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Contractor and Owner's Representative.
2. Starting of painting work will be construed as Contractor's acceptance of surfaces and conditions within any particular area.
3. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.
4. Allow proper cure of newly installed sealant prior to installing specified primer.

3.02 SURFACE PREPARATION:

1. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.
2. Steel:
 - a. Clean steel surfaces to be painted of dirt, oil, or other foreign substances with grinders, wire brushes, scrapers, mineral spirits, sandpaper, and sandblasting as required.
 - b. Be sure to achieve a SP6 surface condition before primer is applied.
 - c. Mix and prepare painting materials in accordance with manufacturer's directions.
 - d. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.
 - e. Stir materials before application to produce a mixture of uniform density and stir as required during application. Do not stir surface film into material. Remove film and if necessary strain material before using.
3. Fascia, Trim, and Soffits
 - a. Clean surfaces to be stained of existing dirt, oil, or other foreign substances.
 - b. Mix and prepare painting materials in accordance with manufacturer's directions.
 - c. Maintain containers used in maintain and application of paint in a clean condition, free of foreign materials and residue.
 - d. Stir materials before application to produce a mixture of uniform density and stir as required during application. Do not stir surface film into material. Remove film and if necessary strain material before using.

3.03 APPLICATION:

1. General: Apply primers, paints and stains in the number of coats, and coat thicknesses, in accordance with manufacturer's directions or as to achieve the desired appearance to match existing (in the case of staining of lumber). Use applicators and techniques best suited for substrate and type of material being applied.
 - A. Apply additional coats until film is of uniform finish, color and appearance. Give special attention to insure that surfaces, including edges and corners, receive a dry film thickness equivalent to that of flat surfaces.
2. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate to establish a total dry film thickness as indicated, or, if not indicated, as recommended by coating manufacturer.

3.04 CLEAN-UP AND PROTECTION:

1. Protection: protect all existing surface from exposure of painting and staining applications.
2. Daily Clean-up: During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.
3. Final Cleaning: Upon completion of painting/staining work, clean adjacent area and other paint-splattered surfaces. Remove splattered by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces. Areas damaged or permanently altered/stained or by paint and stain applications shall be removed and replaced to satisfaction of the Owner and Engineer at the Contractor's sole expense.

END OF SECTION 09900